



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

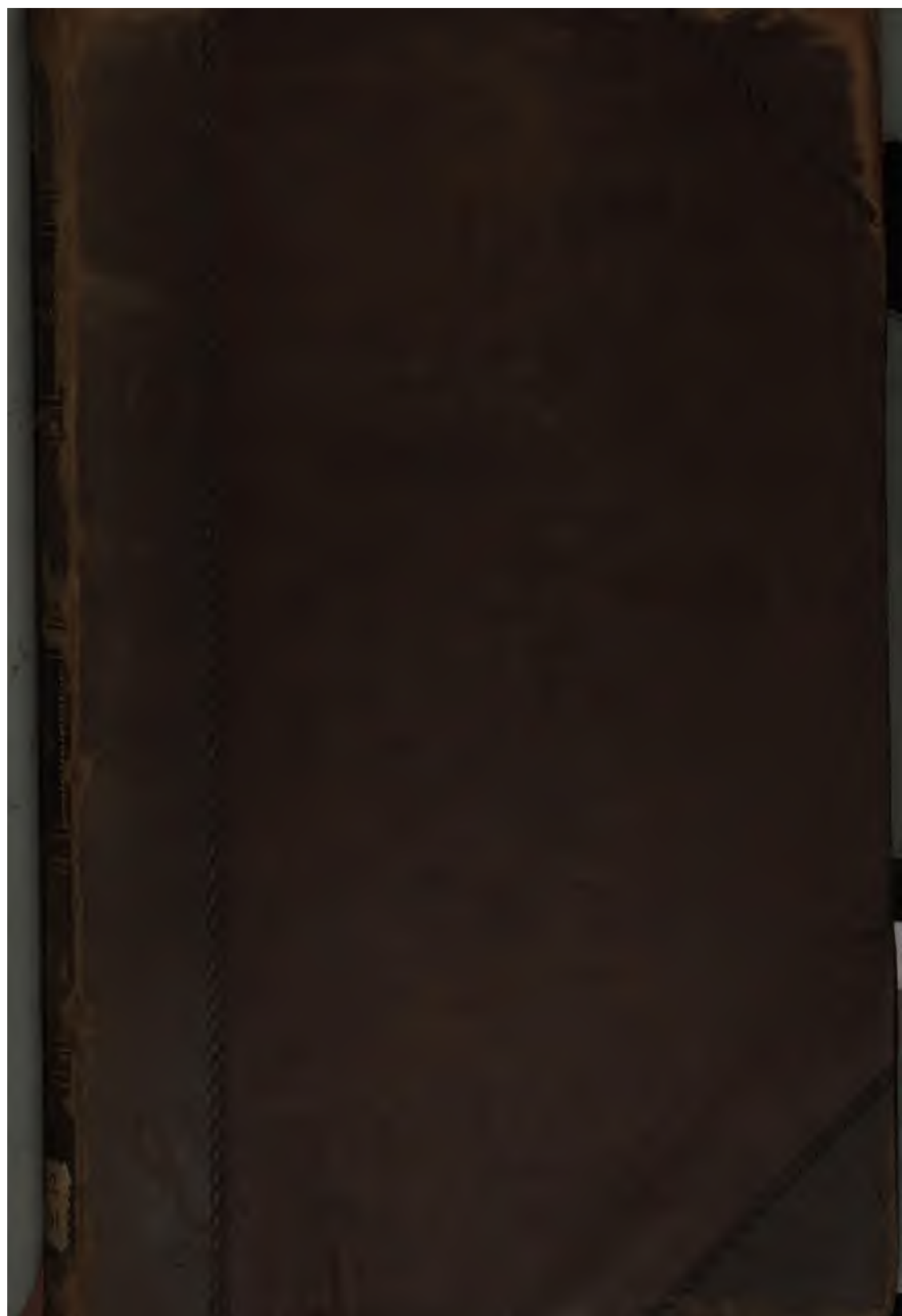
Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>





600037942V

75. 7. 25



E. BIBL. RADCL.

16

A. 3.

C

79.2

19192

e.

281



Map
of
THE SOILS IN
LINLITHGOW SHIRE



GENERAL VIEW
OF
THE AGRICULTURE
OF THE
COUNTY OF WEST-LOTHIAN:
WITH
OBSERVATIONS ON THE MEANS OF ITS IMPROVEMENT,
DRAWN UP FOR THE CONSIDERATION OF THE
BOARD OF AGRICULTURE AND INTERNAL
IMPROVEMENT.
WITH SEVERAL PLATES.

By JAMES TROTTER,
Farmer at Newton, in the Parish of Abercorn.

EDINBURGH:
PRINTED FOR SIR RICHARD PHILLIPS, LONDON:
SILVESTER DOIG, AND ANDREW STIRLING,
EDINBURGH; AND MARTIN KEENE, DUBLIN.
Alex. Smellie, Printer, Edinburgh.

1811.

PREFACE.

THE following statistical view of the county of West Lothian was written at the request of the President of the Board of Agriculture. It was the aim of the writer to give a correct statement of facts, to point out what appeared to him to be defective or faulty in the management of agricultural affairs, and to suggest hints of improvement. The subjects are treated in the order prescribed in the plan furnished by the Board of Agriculture. Some of them are not applicable to West-Lothian, and have therefore been passed over. In a very few instances the order of the plan has been departed from, where it seemed requisite. The observations on "*means of improvement, and the measures calculated for that purpose,*" are not made in a separate chapter, because what occurred to the writer on this subject is inserted in its proper place in the progress of the work.

The

The plan of the Board of Agriculture is prefixed to exhibit a view of the order in which the subjects are treated.

It may be proper to mention, that the greatest part of the following Report was written in the summer of 1808; but it could not conveniently be sent to the printer at an earlier period than the present.

Newton, July 1811.

AGRICULTURAL

WEST-LOTHIAN AGRICULTURAL REPORT.

CHAPTER I.

GEOGRAPHICAL STATE AND CIRCUMSTANCES.

SECTION I.—SITUATION AND EXTENT.

THE County of LINLITHGOW, or WEST-LOTHIAN, forms a kind of irregular triangle, extending about fourteen miles from east to west along the Frith of Forth, its northern boundary. On the east and south it is separated from the county of Edinburgh by the waters of Almond and Breich : On this side it stretches nineteen miles. On the north-west it is bounded by Stirlingshire ; and on the west and south-west by a part of Lanarkshire : This side stretches about thirteen miles. Its mean breadth from north to south may be about seven miles, and its mean length from east to west about sixteen. The extent altogether may amount

A

to

to about 112 square miles, or 57,008 Scotch acres*, the customary measure in the county. Of this near a fifth part has not yet been cultivated, and a great proportion of it perhaps never will, as some of its districts are wet thin soil, and others high rocky grounds inaccessible to the plough : The other four-fifths are all either in tillage, pasture, or woods.

SECTION II.—ECCLESIASTICAL DIVISIONS.

IN this county there are thirteen parishes, viz. Linlithgow, Borrowstounness, Carriden, Abercorn, Queensferry, Dalmeny, Kirkliston, Ecclesmachan, Uphall, Livingston, Whitburn, Bathgate, and Torphichen. Near a fourth part of the parish of Kirkliston lies in Mid-Lothian. A small portion of the parishes of Cramond and Mid-Calder, which are both situate in Mid-Lothian, belongs to West-Lothian.

SECTION III.—CLIMATE.

As this county lies nearly in 56° north latitude, it may naturally be supposed cold : But being rather inclined

* Four Scotch acres are nearly five English.

clined to a level surface, and favoured with the sea breeze along the north side, and with the frequent blowing of south-west winds, which commonly are soft and warm, the climate is neither very cold nor very hot. As two thirds of the county are placed at a considerable distance from the hills on all sides, they may be reckoned to enjoy, if not the first, at least the second climate in this part of the island. Except in general rains, we have only drizzling compared with what falls on the adjacent counties to the west and south. The south-west part of the county does not enjoy so good a climate. By means of the south-west rains, the cold clay bottom, and spongy surface, it is kept almost three-fourths of the year damp. This appears to be the principal reason why improvements are not arrived at the same pitch as in the north and east parts of the county.

We suffer more from the variableness of the weather than from its severity. Snow seldom falls in very great quantities at a time, or lies very deep, or continues long. I have never found the frost, even in places much exposed to it, exceed thirteen inches in depth, for a series of years past. The weather most unfavourable to husbandry is the alternate wet and dry, frost and thaw, prevalent in the months of February, March, and April, which greatly injures the wheat crops, particularly on damp, thin, light soils. The chilling east winds, which blow in May, and often during the greatest part of the month of June, also much impede vegetation, and render the grasses for feeding cattle very scanty.

A specimen of the climate may be taken from the following table, which gives a more particular view of the state of the weather for the last thirty years, com-

mening at Martinmas 1778, and ending at Martinmas 1808. It will be rather favourable, being taken from observations made at Duddingston in the parish of Abercorn, situate on the coast of the Frith.

	1. Frosty Days.	2. Rainy or Snowy days.	3. Depth of snow in inches.	4. Wind West.	5. Wind East.	6. Wind South.	7. Wind North.
A. D							
1779	30	77	2	246	108	6	5
1780	85	111	12	226	122	5	12
1781	38	64	16	201	154	4	6
1782	52	97	17	197	149	6	13
1783	56	89	8	231	129	1	4
1784	63	84	25	217	139	1	8
1785	79	92	24	218	125	3	19
1786	60	87	13	212	145	1	7
1787	29	90	4	220	138	3	4
1788	56	57	9	223	132	5	5
1789	61	97	31	205	126	9	25
1790	32	88		249	109	4	3
1791	42	89	3	244	112	1	8
1792	48	100	15	244	112	3	6
1793	38	101	12	257	93	5	8
1794	23	59	17	259	98	2	6
1795	76	44	39	204	157	1	3
1796	16	28	2	257	100		9
1797	32	39	5	246	114		5
1798	27	30	10	281	73		11
1799	22	44	24	201	153		11
1800	42	32	11 $\frac{1}{2}$	230	125	1	9
1801	33	34	12	219	131	3	12
1802	52	36	19	269	82	1	13
1803	27	22	3	251	106		8
1804	38	34	5 $\frac{1}{2}$	228	122	3	13
1805	31	28	11 $\frac{1}{2}$	213	138	3	11
1806	34	32	10	245	109	2	9
1807	25	39	2	260	81		24
1808	47	52	23 $\frac{1}{2}$	220	119	7	19

At

At each year, looking from left to right, will be seen in No. 1st, the frosty days ; 2d, the rainy and snowy days ; 3d, the depth of snow in inches ; 4th, the westerly winds ; 5th, the easterly winds ; 6th, the winds due south ; 7th, the winds due north. In column 4th, though the winds are set down as westerly, yet it is proper to mention that they often blow from the south-west and north-west ; but as in both these cases they usually lean to the west, they are therefore stated as westerly.

A similar observation must be applied to column 5th, for when the wind blows from the north-east or from the south-east, it commonly leans more to the east than to the north or south points : A south-east or a north-east wind is therefore included in the column of east wind. These observations will likewise serve to explain the reason why so few days are set down in columns 6th and 7th, for though we frequently have south-east and south-west, north-west and north-east winds, yet we very seldom have winds either due south or due north, especially due south. In the preceding table, hazy weather and slight showers are not taken into the account of rainy days.

In the years referred to in the table, the highest degree of heat was from the 21st to the 30th of June 1785. On some of these days the thermometer stood at 87° below the shade of a tree, north exposure ; and at 99° upon the south side. The observation was made at Newhalls upon the sea shore ; and this heat was succeeded by rain and cool weather. So different are the seasons, that about the 6th of June 1787, we had

ice one sixteenth of an inch thick, and near a week of cold and frosty weather,

SECTION IV.—SOIL.

THE soil is extremely diversified, all the different kinds abounding in the county. The richest carse clay and some of the best loams are found in it, as well as a large portion of gravel and sandy soil. The prevalent soil, however, is clay, from the best to the worst kinds.

The following statement of the different kinds of soil will be found to approach pretty near to the truth :

<i>Acres.</i>	
1st,	14,000 good clay.
2d,	7,000 loam.
3d,	7,000 light gravel and sand.
4th,	18,000 cold and wet clay, hard bottom.
5th,	10,000 high rocky land.
6th,	1,008 moss, &c.

57,008

The three first classes of soil are let at all different prices from L.2 to L.4. 15s. per acre ; the fourth class

is

is set at from ten to fifteen shillings ; and the rest from sixpence to eight shillings *.

SECTION

* The following is the *real rent* of the different parishes in the county, as it is recorded in the book in the Sheriff-clerk's office for the year 1806.

Abercorn	-	-	-	£. 4702	10	9
Borrowstounness	-	-	-	5575	16	0
Bathgate	-	-	-	8129	10	6
Carriden	-	-	-	3689	5	0
Dalmeny	-	-	-	5822	14	4
Ecclesmachan	-	-	-	1760	0	0
Kirkliston	-	-	-	7785	15	0
Linlithgow	-	-	-	9477	15	6
Livingston	-	-	-	3363	9	0
Torphichen	-	-	-	3643	10	0
Uphall	-	-	-	3548	0	0
Whitburn	-	-	-	3215	2	6
				<hr/>		
				L. 60713	8	7
Burghs,	{	Linlithgow	-	3219	0	0
		Queensferry	-	586	10	0
				<hr/>		
				L. 64518	18	7

SECTION V.—MINERALS.

Coal.—There is coal in abundance all over West-Lothian. It is at present wrought in the five following parishes;

Valued rent of the county.—Scots †.

Abercorn	-	-	-	-	L. 6945	7	0
Borrowstounness	-	-	-	-	3559	8	0
Bathgate	-	-	-	-	8043	16	8
Carriden	-	-	-	-	4118	2	8
Dalmeny	-	-	-	-	9623	14	0
Ecclesmachan	-	-	-	-	2709	3	8
Kirkliston	-	-	-	-	9269	13	0
Linlithgow	-	-	-	-	12531	4	2
Livingston	-	-	-	-	3586	3	9
Torphichen	-	-	-	-	5769	3	4
Uphall	-	-	-	-	4262	0	0
Whitburn	-	-	-	-	4244	2	11
Queensferry	-	-	-	-	0	0	0
					<hr/>		
					L. 74661	19	2
Corporations or boroughs	-	-	-	-	365	13	0
					<hr/>		
					L. 75027	12	2

† This valuation appears to have been taken in the year 1649, by commissioners appointed by the Scotch Parliament.

See general view of the agriculture of Mid-Lothian by Mr George Robertson, page 34.

parishes; Borrowstounness, Carriden, Uphall, Bathgate, and Whitburn. It was formerly wrought in several of the other parishes, and it probably admits of being wrought in all. The collieries of the greatest importance, and which contain coal of the best quality in West-Lothian and perhaps in Scotland, lie in the contiguous parishes of Borrowstounness* and Carriden. Near 38,000 tons of coal are annually raised from them†. As these parishes are bounded on the north by the Frith of Forth, their situation greatly facilitates both the exportation of coal and its conveyance to the home markets on the coast. In the time of peace, a considerable quantity was usually exported to Holland, Germany, and the countries on the Baltic. Some is likewise carried to the London market, as well as coastwise to the north of Scotland. It is usual to divide the coal

* Coal is said to have been wrought in the parish of Borrowstounness above 500 years ago. The depth of the pits varies from about 40 to 70 fathoms. The seam is sometimes 10 or 12 feet in thickness.

See the stat. acc. of Bo-ness, written by the Rev. Mr Rennie.

† At Borrowstounness are annually raised :
Between 9000 and 10,000 tons of great coal.
—— 5000 and 6000 tons of chows.
And about 10,000 tons of panwood or culm.

At Grange Colliery in the parish of Carriden :
About 5000 tons of great coal.
—— 2800 tons of chows.
—— 5500 tons of panwood or culm.

coal into three kinds; 1. great coal; 2. chows; 3. culm or panwood. The price of the great coal is 10s. per ton; chows 7s. 6d.; culm 4s. The culm is consumed chiefly by the salt-works, at which 48,000 bushels of salt are annually made in these two parishes *.

*Account of Lord Polkemma's coal in the parish of
Whitburn.*

Lord Polkemma has a coal pit, called Green-rigg Colliery, on a rising moor near the Cult, where this county borders with Lanarkshire. A new pit was sunk in June 1806, out of which the coal is now taken at the depth of 14 fathoms from the surface. There is first a bed of moss fourteen feet deep, and then a variety of other strata. The seam worked is four feet seven inches of clean coal. The quality is uncommonly good. It is so much in request that it is sometimes sent even to Edinburgh; and all the country as far as Ratho is principally supplied from it, and from a coal pit

† 30,000 bushels are made in Borrowstounness, and 18,000 bushels in Carriden.

The number of hands employed in the coal and salt works in these two parishes may be stated at 340: For Borrowstounness, 200; and for Carriden, 140.

About three-fourths of the great coal raised in these collieries are carried coast-wise.

pit of Lord Torphichen's quite contiguous, but situate in Lanarkshire. There are thirteen men and two boys employed in the pit, besides some labourers. It is worked by a common gin, and one horse draws 250 loads a-day, in seven hours. Last year there were sold 64,000 loads, or about 10,666 single horse carts. Each cart at an average takes fifteen hundred weight, or six loads. The price is 4s. per cart for the large and chow coals mixed. The air in the pit is good, being quite free from sulphureous damps. The colliers have remarkably good appetites, are very healthy, and from their great earnings are enabled to live very comfortably.

It would be of great consequence if an iron railway were made to carry so excellent a kind of coal in greater quantities to Edinburgh.

Silver and Lead.—In the southern extremity of the parish of Linlithgow, in the hills of Bathgate, lead-mines were formerly wrought by the ancestors of the Earl of Haddington. The property has since been transferred to the Hopetoun family, who have made frequent trials for the discovery of lead, among the old workings, and in the neighbourhood of them, but without success. Silver is said to have been extracted from the lead obtained in these mines, in the proportion of seventeen ounces of silver to one ton of lead. Small pieces, named groats, of which the silver was procured from these mines, were coined at the mint of the kings of Scotland, during their residence
at

at Linlithgow. Some of them are said to be still preserved in the cabinets of the curious *.

In the parish of Bathgate a small vein of silver ore was found several years ago in a lime-stone quarry, the joint property of the Earl of Hopetoun, Mr Marjoribanks, and Mr Paterson Shairp; but it was not deemed of sufficient importance to be wrought †.

Iron-stone.—Iron-stone is found in various parts of West-Lothian. It was formerly wrought, and still is occasionally wrought in the parishes of Borrowstounness and Carriden; and it is usually sold to the Carron company.

Free-stone.—The county is well supplied with free-stone along the whole of its coast, and also in most of the inland parts. In many places the stone is of excellent quality. On the shore to the west of Queensferry, there is a quarry of considerable extent, from which the stones for building the fortifications and quay of Dunkirk are said to have been exported. It is curious that the lime used in the mortar of these buildings is supposed to have been furnished by a lime work in the parish of Abercorn in the neighbourhood of this quarry. This is the tradition of people who lived on the spot ‡.

Whin-

* See the Stat. Acc. of Linlithgow and Ecclesmachan.

† See Stat. Acc. of Bathgate.

‡ See the Stat. Acc. of Dalmeny and Abercorn.

Whin-Stone.—Whin-stone, and the other common sorts of stone, are met with in every part of the county. In some places basaltic rock likewise is to be seen.

Lime-stone.—There is an inexhaustible store of lime-stone in West Lothian. Strata of it appear to lie in a direction from north-east to south-west across the whole breadth of the county. It is wrought in various places, and it is very generally used as a manure.

Marl.—This fossil is not known to abound in the county. In the parish of Dalmeny, however, there is a bed of shell-marl to the extent of nine acres. None of much consequence has been found any where else.

SECTION VI.—WATER.

THERE are no rivers, or waters as they are commonly called, but those formerly mentioned, by which the county is bounded. Several small streams, termed *burns*, run in every direction across the county, which serve the purpose of turning the various mill-machinery in use. In the running streams no fish are caught to any amount, except fresh water trout. There is a loch on the north side of the town of Linlithgow above a mile in length and about half a mile in breadth, in which
pike,

pike, perch, and eel*, are found in considerable quantities; and another small one to the south of the town, called Loch Coat, stocked with the same kind of fish.

Springs.—There is a mineral spring in the parish of Linlithgow; another in that of Ecclesmachan; and a third in the parish of Abercorn; all tinged with sulphur, and possessing the usual qualities of such water. In the parish of Torphichen, there is likewise a spring strongly impregnated with iron. These springs are not now much frequented; though people labouring under the scrofula and other diseases formerly resorted to those in the parishes of Linlithgow, Ecclesmachan, and Torphichen.

CHAP.

* In great floods, 15 hundred weight, or even a ton of eels, are frequently caught.

CHAPTER II.

STATE OF PROPERTY.

SECTION I.—ESTATES, AND THEIR MANAGEMENT.

THIS county is possessed by between thirty and forty landholders ; of whose estates the rents may be from L.200 to L.3000 per annum ; besides a few of inferior rentals, and others consisting of a small number of acres in the immediate neighbourhood of the two borough towns of Linlithgow and Queensferry. Of the greater estates there are four possessed by four peers, whose rents may be from L.4000 to L.10,000 per annum.

Several of the proprietors are, or have been, employed in the army, the navy, and the law departments. Numbers of them reside on their estates, and keep a small farm in their own hands, with a sufficient quanti-

ty

ty of old pasture grass to feed cattle and sheep for the use of their own families, and also for the butcher. The farms occupied by the nobility and gentry are generally in a state of high cultivation, although it is effected at more expence, for the most part, than when occupied by farmers. This is owing chiefly to the great variety of business often carrying on at the same time, in the different parts of their grounds; to their using more expensive harness and implements; and perhaps most of all, to the sluggishness, carelessness, and inattention of servants, to whom gentlemen themselves seldom have time or inclination to attend, in order to remedy such abuses.

By far the greatest proportion, however, of the lands of all the estates in the county is let on lease to farmers and graziers.

The estates are either under the immediate management of the proprietors, or left to that of agents, commonly called factors, or stewards, who, for the most part, have been bred to the law, or have some knowledge of it. How far the management of estates is good, or how it may be improved, are questions which will fall to be considered in the section of leases.

SECTION II.—TENURES.

THE tenures in this county are either *freehold* or *feu*. Of the former there were 67, in the year 1806, according to the list in the Sheriff-clerks office. The number of the latter varies considerably at different times, and cannot be so easily ascertained.

CHAP.

CHAPTER III.

BUILDINGS.

SECTION I.—HOUSES OF PROPRIETORS.

THE situations of almost all the houses of proprietors appear to be well chosen for the estates. Most of them are well sheltered and adorned with plantations. The views from the seats of the nobility and gentry along the coast are delightful. Hopetoun house, especially, has always been admired in this respect, as well as for the elegance and magnificence of its architecture, and for the beauty of its pleasure grounds. It is not surpassed, nor perhaps equaled by any in Scotland, and, it is said, by few in England. Barnbougle house, Dundas castle, Duddingston house, Binns house, Carriden house, and Kinross house, are all likewise finely situated, and command extensive views both of the Frith of Forth

B

and

and of the opposite coast. On the inland side of the county, many of the proprietors have excellent houses; and in pleasant situations; but the views from them are more circumscribed than from those already mentioned.

SECTION II.—FARM HOUSES AND OFFICES.

FARM houses and offices have generally been much improved of late; and the newly built ones, of which there is a considerable number, are substantial and good, and are laid out mostly in the form of a square court.

The farm houses are very different, both in the plan and in the size; varying according to the inclination of the landlord, or of the tenant. Most of the new houses are two stories high, consisting of five or six rooms; besides a kitchen, dairy, larder, and other apartments for convenience. The length of the houses may be about forty feet, the breadth twenty, and the height of the ceilings from seven to nine. They are generally finished in a neat manner, and covered with blue slate or pantile.

Besides houses of this description, there are still a very considerable number on the old plan, of one story, which want several apartments that are convenient and even necessary in every farm house.

The

The dimensions of farm-offices are very various, and are for the most part in proportion to the size of the farms. The barn is usually from sixty to seventy feet in length, and from eighteen to twenty in breadth; the height of the walls being from six feet to nine. The stables and cow-houses are commonly on the side of the square opposite to the barn, and of the same length with it, the height of the walls being six or seven feet. A shed frequently fills up the interstice, at one side of the square, between the barn and range of stables and cow-houses. When it is intended to have a granary over the shed, the height of its walls is from six to nine feet *.

The wood which is used in the buildings is sometimes wholly foreign, and sometimes partly foreign and partly of the growth of the county. The farm-offices are almost all covered with pantile or with thatch. Thatching is now much better understood and executed than formerly. Were it not for the very great demand for straw to be converted into dung, thatch roofs would probably become much more general than pantile ones. Thatch roofs have a tendency to preserve the timber longer; and by moderating the heat in summer and the cold in winter, conduce materially to the greater comfort of the animals. This kind of roof is, no doubt, more liable than the other to accidents by

B 2

fire,

* Proper sheds, with a granary over them, are still much wanted in more than four-fifths of the farms in the county. This is a considerable loss to the farmers, as few of them have any place to lay up grain, either for seed or for other purposes.

fire, as well as to destruction by hens, rats, mice, and sparrows.

SECTION III.—REPAIRS.

THE subject of repairs will occur afterwards in the section of leases.

SECTION IV.—PRICES OF BUILDING, MATERIALS, AND ARTIZANS LABOUR.

A plan and specification of expences of a farm-house and offices, built at Stacks in the parish of Carriden, in the year 1806 and 1807, are inserted in the Appendix No. 1. which will shew the price of building, materials, and artizans labour, better than any general account that can be given.

SECTION V.—COTTAGES.

THE dimensions of farm cottages is about twenty feet by sixteen, and the height of the walls six feet, though many

many of them are less in all these respects. They consist merely of a single apartment, and are generally covered with pantile or with thatch. The expence of building a house of this kind is from L.25. to L.30. Besides the small size of such houses, another very material fault is, that their floors are not raised above the level of the surrounding ground; on which account they are kept generally damp; and were it not for the plentiful supply of fuel which the county affords might prove detrimental to the health of the inhabitants. There is another description of cottages, called feu-houses, built in different parts of the county, which are free from the faults above mentioned. Their floors are raised to a proper height above the surface of the ground; the houses are of a commodious size, and divided into convenient apartments, and are thus rendered healthful and comfortable habitations. Many of these feu-houses, however, partake of the fault of the farm cottages, in not having their floors properly raised above the surface of the ground. See the plan of a cottage in the Appendix No. 11.

SECTION VI.—BRIDGES.

In this county there is no great want of bridges where they are necessary; but the streams being all small, the bridges are so likewise, and merit no particular description.

Bridges have been erected either by subscription or by borrowed money; the interest, in the last place, being defrayed by the surplus of the road-toll-money. The bridges on the great roads are kept up by money raised at the tolls on these roads. Linlithgow bridge is an exception to this, being kept in repair by the town, who levy custom on certain goods passing along it. The bridges on the parish roads are kept up by money arising from the conversion of the statute labour in the respective parishes. There is also a county fund raised by a voluntary assessment among the landed proprietors, of which a part has been usually applied to the same purpose.

CHAP.

CHAPTER IV.

OCCUPATION.

SECTION I.—SIZE OF FARMS.

THE size of farms is from 50 to 600 acres, though most of them do not fall below 70 nor exceed 200; separate farms occupied by one tenant being excepted.

It cannot perhaps be affirmed that there is much difference in the management between the smaller and larger farms, as there are some better and worse managed indiscriminately among all the different sizes between those of 50 and 600 acres. To farms below 50 acres, of which kind, however, there are very few, except those which consist of two or three acres in the neighbourhood of towns, the same observation does not apply. Such farms, in general, are by no means so well managed as those of fifty acres and upwards; and if we should say that the good management of such small farms decreases

compared with what it was thirty or thirty-five years ago.

Tenants of small farms labour under peculiar disadvantages, and hence have not improved in the same proportion as those of the greater ones. They are under the necessity of working, for the most part, with their own hands; and are thereby prevented from overseeing the various operations carried on upon the farm, and also from procuring, by means of intercourse with others of the same profession, that information which is necessary to every enlightened farmer.

Within the last forty years, there has been a great change in the manners of the farmers, and in their mode of living. In the furniture of their houses, and in dress and food, the change has been much to the better, having kept full pace with the other improvements of the times, and perhaps even exceeded them. As to the religious and moral habits of the farmers, they are, in general, regular in their attendance on public worship at the church, industrious, sober, and temperate in their private manners, though not averse to social intercourse. In these respects they are not degenerated from their forefathers; and being divested of the bigotry of former times, they possess a more enlightened and a more liberal turn of mind.

SECTION III.—RENT.

In Chap. I. sect. 4. which treats of soil, the different kinds of soil are specified, with the rent affixed to each kind respectively.

Rents

Rents are mostly paid in money by all who have lately got leases ; although a considerable number of farms still pay partly in grain, in money, in fowls, and in carriages of coal. The grain is either delivered in kind by the tenant to the landlord, or, when this is not done, it is usually paid in money, according to the *fiar prices* of the county, though sometimes according to a price stipulated in the lease. Fowls are likewise paid either in kind, or according to a price fixed in the lease. When they are not delivered in kind according to bargain, and when, at the same time, no price has been specified in the lease, the market price of them is charged by the landlord on the tenant*.

SECT. IV.—ON TITHES.—No tythes are paid in kind that the reporter has heard of in this county.

SECTION V.—POOR-RATES—OTHER PAROCHIAL TAXES.

The poor-rates will fall to be considered in Chap. 16. sect. 10. The only other permanent parochial tax with which this county is burdened is that of road-money, which will likewise be taken notice of in Chap. 16. sect. 1.

SECTION

* Forty years ago, the price of a hen did not exceed 6d. Now, it is generally from 2s. to 2s. 6d.

SECTION VI.—LEASES.

IN corn farms, leases are commonly granted for the space of nineteen or twenty-one years; although, in some instances, for twenty-four, thirty-eight, and even fifty-seven years. The grass-farms are all let on short leases, from one to four years*. The entry to farms for tillage is commonly at Martinmas. The terms of payment by some are at Martinmas and Whitsunday, for the crop immediately preceding; by others quarterly, in equal portions. Grass rents are paid before the end of the year for that year's crop.

The covenants in the leases run in the following terms: The houses are all delivered over by the proprietor to the tenant in a tenantable or habitable condition, in which state the farmer is bound to keep them during the currency of his lease, and to leave them in the same state at his removal. In most estates the landlord furnishes great timber for the houses, though this practice is not so common now as it was formerly. The proprietor always reserves the minerals, with a right

* The landholders sometimes find it for their interest to let their lands thus in grass, as by lying in this state they become more enriched. They have it likewise in their power to let such lands afterwards for breaking up, on a lease of three or four years, the rent being from L.4 to L.7 Sterling per acre. This mode of breaking up, however, will not succeed if often repeated; as the lands will in this case require a summer fallowing, with a proper quantity of manure to recruit them.

right to work them, upon paying damages to the tenant. In inclosed lands, the tenants are bound, in most cases, to uphold the fences. In some farms the landlord upholds them; in others, the landlord and tenant bear an equal part of the burden. This is perhaps the best method to keep them good, and to prevent litigation; for in the instance first mentioned, there are few outgoing tenants who are not pestered by the incoming ones; and the proprietor, in consequence, is often dragged into a process which occasions much expence. Many of the old leases were crowded with useless rules and with directions for courses of crops, tending neither to the good of the landlord nor of the tenant. The present ones, in general, bind the tenant to leave a proper proportion of land in grass at the end of his lease, and the remainder of the farm in such a state as accords with the rules of good husbandry. Subsetting is always prohibited. In the case of an outgoing tenant, all the dung produced on the farm must be left on it: But the outgoing tenant may, if he chuses, lay it all on the land at any time before Whitsunday, for the benefit of his last crop. If this is not done, the incoming tenant takes the dung at a price, which is usually fixed by arbiters, who are chosen by the parties. When this article with regard to dung happens to be omitted in leases, it may still be enforced by law: The practice of the country is such, and the law gives sanction to it. In this county, it is customary to roup both the grain and the straw of the last crop; the profits of the whole accruing to the outgoing tenant.

There is an article of considerable importance, which is seldom inserted in the leases of this county, but is very deserving of insertion. It is this: The outgoing
tenant

tenant should be bound to allow the incoming one to sow grass-seeds on such fields as the latter thinks suitable, upon paying damages, which ought to be rated by arbiters chosen by the parties.

Proprietors should likewise be reminded, when land has not been improved, and requires much stock to be laid out in its improvement, that a number of years must generally elapse before a sufficient return is derived from it ; and that it is therefore reasonable that such land should be let on a longer lease than that which has been previously improved. The practice of letting land of this kind, on a longer lease than nineteen or twenty-one years, was prevalent in this county sometime ago, but of late has been very much laid aside. This is the more to be regretted, as it must prove a material obstacle to the improvement of waste lands. On the other hand, a practice wholly of a contrary description has crept in, viz. that of letting land on a short lease, from nine to eleven years. This is a very absurd and pernicious system. No tenant will lay out much in the improvement of a farm let on so short a lease ; the land will be deteriorated ; the tenant will reap no advantage from his bargain ; the rent will ultimately be diminished to the proprietor ; and by the diminished produce of ground under such ill management, less grain will be brought to the market ; and in the end, the public too must suffer their share of the evil.

I would beg leave likewise to suggest to proprietors who have it in their power,* to grant a renewal of leases
to

* Some of them are prevented by the nature of the entails by which they hold their estates.

to tenants occupying their farms, from two at least to five years before the old ones expire. This would tend much to keeping agriculture in an even undisturbed progress : Whereas the prevalent method, that of not granting a lease before the last crop, and sometimes not earlier than a few months before the very term of removal, tends to make the tenant take every possible advantage of the ground, for the sake of present profit ; and of course to disorder and spoil the farm for years to come, to the great hurt of the incoming tenant, and even to the public at large, as the same quantities of grain cannot be produced from it for a number of crops. Were landlords as attentive to have their farms occupied by tenants of sufficient stock, ability, and attention to their business, as many of them are to procure high rents, they would seldom have occasion to change the tenant. Many of them might probably wish to follow this plan ; but, from their various occupations or amusements, they leave their estates to the management of agents, whose chief study is to muster a large rent-roll. These agents of course prefer the highest bidder, who is very often a needy or desperate tenant, and who, by one or two sterile crops or other accidents, is rendered incapable of fulfilling the terms of his lease. The whip of the law is applied to procure the landlord's rent ; the farmer is ruined ; the lands left also in poverty ; whilst the lawyers are the only gainers. What is much to be regretted, this is not a single case, but is too often repeated, by which agriculture is, in many places, kept rather in a retrograde state.

With respect to the modes of letting land in use in this county, that by private offer is the most common, it being understood that the highest offer will be preferred,

red, when the proprietor is satisfied with the character of the tenant. In a few instances of late years, the method of letting land by public roup has been adopted, but this is by no means frequent. Formerly, either the proprietor himself, or his factor or steward, set a rent on the land; and more recently it was customary to employ a valuator*, or surveyor, for the purpose. But as landholders think that the mode of letting by private offer is more for their interest, and as the demand for farms of late has been and still is very great, the old plan has been laid aside; and, in the present circumstances, it is not likely that it will be resumed. It may, however, be observed, that the new mode is contrary to the practice of making bargains in other cases. It is customary for the person who exposes his commodity to sale in the market, in the first instance, to set his price on it. It is true, indeed, though some of the proprietors might be disposed to follow the old plan, that they are precluded from adopting it, by the form in which their estates are entailed, being constrained to let their lands either by private offer or by public roup.

It

* Unless the valuator has resided for some time in the neighbourhood of the land which he may be employed to value, his opinion cannot safely be relied on for its accuracy. It is well known to farmers that it is extremely difficult to judge the value of land in a part of the country with which the valuator is not exactly acquainted. A valuator, therefore, who is brought from a distance, must either give an opinion at random, or must take the advice of some person who resides in the neighbourhood; and in this case, he cannot be said to give a valuation which is strictly his own.

It must occur to every one, that from the new modes of letting farms, there arises an evil of no inconsiderable moment, viz. the too frequent removals of old tenants. This is viewed, and indeed felt, as an evil by the old tenant ; exasperates him against his landlord ; and is apt also to engender in him a spirit of disaffection to the established government of the country. These remarks are founded, not on speculation or conjecture, but on the observation of those who have the best opportunities of making it. It is undeniable also, that since the era of the French revolution, an extraordinary degree of irritation has existed in the minds of men among the lower classes ; and though this spirit may appear of late to have been smothered, or to have subsided, yet there is reason to suspect that it is not wholly extinct, but, on the contrary, that if new opportunities shall occur, it may again be excited and break out into a flame.

There are two ways in which order may be maintained in a country, either by military force, or by those who have power or influence retaining the attachment of the people. That the last of these modes is preferable to the first, where it can be applied, is indisputable, and that the proprietors of land have it in their power to apply it to their tenants is equally certain. For the proper application of this principle, the body of the landholders are responsible. It is not within the proper sphere of the legislature to interfere in matters that relate to the landlord and his tenant, yet few things can conduce more to its stability than possessing the attachment of the body of the tenantry throughout the kingdom. This attachment it is per-

C

haps

haps impossible to secure but through the medium of the landholders. The tenants are the link by which the higher and lower orders in the country are connected. In the same manner that the proprietors of land can secure the attachment of their tenants, the tenants can secure the attachment of their servants and dependants; and the servants and dependants of the tenants form a great part of the population of the country. If therefore the loyalty of the tenants is sound, there can be little to fear from internal commotions.

The claims of old tenants on their landlords may also be urged from considerations of humanity and generosity. There is something harsh in turning away an old tenant who has managed his affairs with prudence, and conducted himself with honesty and fidelity towards his landlord.

On these accounts it is surely adviseable to the proprietors of land to give the preference in the letting of their farms to all old tenants and their descendants, (for the reasons are the same in both cases) who have behaved well, and whose offer is equal or near equal to the highest offer of another tenant of credit and ability. But the offer of every foolish and desperate adventurer ought not, in any case, to be taken as the rule of judging of the value of a farm. Such a plan as this requires no great surrender on the part of the proprietor, and it ought to satisfy the tenant. The proprietor cannot be expected to let his land below the fair market price; and the tenant can have no good reason to complain of giving this price.

SECTION

SECTION VII.—EXPENCES AND PROFIT.

A calculation of the expences and profits of farms is not only difficult in itself, but any conclusion drawn from it must be extremely vague and unsatisfactory. The grounds or data of calculation of this kind never remain stationary. A calculation for one farm must be inapplicable to another. The calculation for the very same farm in one year will be useless for it in another; because the expence of labour and necessary materials; the prices of cattle, grain, and other productions of the soil; the state of the seasons, and consequently the quantity and quality of produce, are continually fluctuating. The only information which I find myself able to give on this subject will occur in the section entitled "Course of Crops," where the average annual produce per acre of a piece of ground, during a course of crops, will be stated with the expences specified. From the view of the subject there given, every one may draw conclusions for himself.

CHAPTER V.

IMPLEMENTS.

SECTION I.—PLOUGHS.

THE plough now most in use in the county, and very deservedly, is the chain plough drawn by two horses, as improved by Mr James Small *. The mould-boards
of

* Small's plough is understood to be the Rotheram one much improved. The famous John Earl of Stair, who inherited from his mother the estate of Newliston, in the parish of Kirkliston in this county, is said to have sent an artist to England to learn to make ploughs upon the English model. On his return from England, this artist made ploughs for his Lordship after the model of the Rotheram plough, which he had seen in Yorkshire; Rotheram being a town in the west riding of that county †.

† The Rotheram plough was never generally used in this county; and Small's improved one, though partially used before the year 1780, was not brought into general use till after that period.

of this plough, which consist of cast-iron, are made sometimes convex, and sometimes concave on the outside, according to the taste of the farmer, or the quality of the soil in which they are to be used. In soft soils which are apt to adhere to the iron, the convex mould-board clears itself better from the earth than the concave one; and on that account may be considered as more easily drawn in such soils; but in other kinds, not apt to adhere to the iron, it is thought that there is very little difference either in the execution of the work, or in the ease or difficulty of the draught. The price of a plough of this kind, when fully dressed, is L.3. 10s.

C 3

Old

Lord Stair is supposed to have been the first in Scotland who cultivated broad clover, turnips, and cabbages, in the open fields.

“ He resided at Newliston for 20 years subsequent to his recall from his embassy at Paris in 1720, and seems to have bestowed much attention on his maternal inheritance. The pleasure grounds, nearly three miles in circumference, are entirely after his design, covered with trees of his planting, and adorned with artificial lakes. Although his military ideas have evidently entered into every part of the plan, yet the extent of the whole prevents any bad effect, and Newliston may be considered as a most delightful place. He died here in 1747; and was buried in Kirkliston church, without a monument to point out the spot where he lies.”—*Stat. Acct. of the parish of Kirkliston*, written by the Rev. Mr John Muckarsie.

Old Scotch Plough.

The old Scotch plough, formerly universally used, is now almost totally laid aside, although it may still be deemed an useful instrument for breaking up very coarse and tuff soils, where great strength is requisite.

SECTION II.—HARROWS.

Four different kinds of harrows are in use here :
1st, The old kind, which formerly was exclusively used over all the county, and still is used in many places.
2d, A new kind, invented by Mr Low, a Berwickshire gentleman, and author of the first Agricultural Report of that county ; the principal of which is, its being made not in a rectangular but in an oblique form, with the line of draught so adjusted that none of the teeth follow one another in the same tract in the ground. This is an excellent kind of harrow ; and I have no doubt that the use of it will become general, as it saves one-fourth if not one-third more of time than the other kind. The price of a pair of harrows of this sort is L.2. 12s. 6d.
3d, A very heavy kind of harrow denominated a brake, requiring three or four horses to draw it, according to its weight and the stiffness of the soil. The use of it is to reclaim very rugged soils. It is sometimes made in the form of an equilateral triangle, each
of

of the sides being from six to ten feet in length, as the farmer inclines to have it made, with a row of long and heavy teeth inserted in two of the sides ; the third side, which in using is farthest from the horses, being left without teeth, in order to make it work more freely. It is also sometimes made in a square form, the sides being six feet in length, with the teeth long and heavy as in the one before mentioned, and inserted in the same manner as in common harrows. In lands under good management, the brake is not needed, being superseded by the use of the oblique harrow. 4th, A small and light kind of harrow, with a greater number of teeth than in the common sort, but in other respects made in the same form, is likewise in use for harrowing in grass seeds sown among wheat or other crops of grain.

SECTION III.—ROLLERS.

ROLLERS are very generally employed here. They are made of free stone, four, five, and some six feet and a half in length. The two first kinds are from fifteen to sixteen inches in diameter ; the last from eighteen to twenty inches. Wood and cast iron ones are likewise used. Rollers are the most powerful instruments for breaking clods expeditiously ever yet found out. A large stone one, of the size last mentioned, requires three good horses to draw it ; and will go over

four acres in a day, and even five or six, if the horses have to turn seldom. The price of one of the smaller rollers, when well finished, is about L.3. and one of the larger sort about the double of this sum.

Rollers divided in the middle, though not in use here, are certainly more suitable than the other kind for particular purposes; especially for the rolling of crops; as they are not so apt to tear up the ground nor to damage the plants in the turnings.

SECTION IV.—DRILLS.

THE drill implements in this county are few and simple, there being only two sorts, the one for sowing beans, and the other for sowing turnip seed. They are very well suited to the purposes for which they are intended, but as there is nothing new in their principle, and as various modes of constructing these implements are in use and generally known, a description of them seems unnecessary.

SECTION V.—HORSE-POES.

A small plough, made in the form of Mr Small's improved one, drawn by one horse, is sometimes used
for

for the purpose of laying down the earth from the sides of drills of beans, potatoes, and turnips. It is employed in this operation with more advantage than any other instrument, where the land has not previously been sufficiently cleaned.

SECTION VI.—SCARIFIERS, SCUFFLERS, SHIMS, BROAD SHARES.

SCUFFLERS, shims, and broad shares are all used occasionally here in the drill husbandry. The plough with the broad share and two lateral coulter is the most useful implement of the whole; as, where the land is clean and well pulverised, it supersedes the use of all the rest. It is so constructed that the lateral coulters may be taken off, and two-mould boards applied in their stead; by which means it answers the purpose both of cleaning the land and of laying up the earth to the roots of the plants. The price of it is about L.3.

SECTION VII.—THRASHING MILLS.

THRASHING mills are now almost universally used in the county. Most of them are wrought by horses,
some

some by oxen, and a few by steam and also by water. When this machine is wrought by horses, it may be questioned whether, when compared with the flail, there is much saving of expence as to labour in very small farms, provided the flail thrashes equally clean, which however it is thought rarely happens. The use of thrashing-mills wrought by water is a clear saving equal to the value of the labour of all the horses employed in thrashing the same quantity, and also to that of the man's work who drives the horses. At the same time this is not strictly true unless the expence of erecting the thrashing-mills which are employed is the same in each case.

The advantages of thrashing-mills over flails are, their thrashing cleaner *, and shaking the grain from the
the

* It is perhaps impossible to determine, with any degree of accuracy, what proportion of grain would be gained, on an average, by the general use of thrashing mills, more than would be obtained by the use of the flail. If the sheaves are not properly spread, or are not introduced into the thrashing-mill with the tops foremost, and the stalks at right angles, or nearly at right angles, to the rollers, there may be as much or even more loss by the use of thrashing-mills than by the use of flails. The inattention of servants often leads them to execute the work prescribed to them in a slovenly and imperfect manner; and the loss of grain, whether it be occasioned by the use of thrashing-mills or of flails, will always be found to be in exact proportion to the inattention or laziness of the workers employed. Ill constructed thrashing-mills, too, will execute the work imperfectly, and will thus occasion a loss of grain; and certainly it cannot be affirmed

the straw more effectually; their preserving the grain drier and more pure in colour, especially when damaged by smut; their enabling the farmer, by thrashing large quantities in a shorter time, to carry it occasionally to a more advantageous market, to supply himself more speedily with seed for seizing the opportunity of a proper season for sowing, and to save damp and damaged grain that might be destroyed by long keeping. They have also this contingent advantage, that they sometimes afford an opportunity of employing farm labourers, when otherwise they might be unemployed, or employed to little purpose, in consequence of bad weather.

A number of small thrashing-mills, wrought by two horses, are in use, of which the price is about L.40. There are others wrought by three or more horses, which when well finished cost at least L.100 *. See the

firmed that the thrashing mills which are used through the country are all well constructed. For these reasons, any estimate of the grain, which would be gained by the general use of thrashing-mills, more than would be obtained by the use of flails, must be either wholly, or at least in a great measure conjectural.

Thrashing-mills, constructed after Mr Meikle's model, when well made and managed by attentive servants, may perhaps save about two and a half or three per cent. more on an average than is usually obtained by the flail.

* Suppose the erection of a thrashing-mill, which is wrought by four horses, costs L.100, this sum at compound interest will accumulate in fifteen years to L.207 or thereabouts. In order to repay L.207 at the end of fifteen years, the annual expence of thrashing fifteen years crops, must be about

drawing of a thrashing-mill, wrought either by water or by horses, in the Appendix No. 2. See also that of a contrivance

about L.9. 13s. less when thrashed by the thrashing-mill than when thrashed by the flail; for it requires about this sum to be saved yearly to amount at compound interest to L.207 in fifteen years. But as a thrashing mill, of which proper care is taken, may last fit for use near thirty years †, with the aid of repairs which may amount to about L.30, an uniform sum added yearly in succession, which, at the end of thirty years, would repay the money sunk by the erection of the thrashing mill, and by the necessary repairs, is the proper annual balance against it on account of its erection and repairs. Now, the sum of L.100, which was supposed to be the cost of erecting a thrashing-mill wrought by four horses, accumulates at compound interest, in thirty years, to about L.430. This, together with the sum of L.30 which was allowed for repairs, amounts to L.460; and the sum of L.6. 18s. 6d. annually added, as already mentioned, will in thirty years, at compound interest, repay, or nearly repay, the money supposed to be sunk by the erection and repairs of the thrashing-mill. If, therefore, a farmer thrashes 700 bolls yearly, the sum of L.6. 18s. 6d. which was stated as the annual balance against the thrashing-mill, lays an additional expence of somewhat more than twopence farthing

† The time during which a thrashing mill will last fit for use must in a great measure depend on the number of bolls annually thrashed. In a farm where not more than 700 bolls or thereabouts are annually thrashed, it is not necessary to employ a larger or more powerful thrashing-mill than might have been erected a few years since for about L.100. A thrashing mill of this sort, of which even proper care is taken, probably will not continue fit for use during so long a period as thirty years, if the number of bolls annually thrashed greatly exceeds what has been stated.

contrivance by the late Mr G. Henderson at Ponhard in this county, for making horses draw equally in thrashing-mills, No. 3.

SECTION

farthing on the thrashing of every boll; if he thrashes only 350 bolls, it lays fourpence-halfpenny on every boll, and so on in the same proportion.

If a 25th part of the grain which a flailman thrashes is allowed as his wages, 18 bolls of common oats may be thrashed by the flail for 14s. 4½d. or at the rate of 9¼d. per boll, the average price of the oats being taken at L.1 per boll. The same quantity may, on an average, be thrashed in four hours and a half, by a thrashing mill wrought by four horses, of which the erection is supposed to cost L.100 as above stated. Such a thrashing mill will require six hands to carry on the necessary parts of the work. Their wages, together with the value of the labour of four horses for four hours and a half, may amount to 7s. 9d. †; but as the

† The ground on which this statement is made is as follows: A man and a pair of horses, including repair of harness, may be maintained for L.90 per annum; L.30 being allowed for the man, and L.60 for the horses. There are about 313 work days in a year. If, therefore, L.90 are divided by 313, the expence of maintaining a man and a pair of horses as proportioned to one day's work will be shewn. When L.90 are divided in this manner, the quotient is 5s. 9d. If the expence of the man's maintenance and that of the horses are taken separately, the former is 1s. 11d. and the latter 3s. 10d. for every work day in the year.

The expence of maintaining four horses for half a day	-	-	-	-	L.0 3 10
Driver's wages for half a day	-	-	-	-	0 0 11½
Wages of the man who spreads the sheaves for half a day	-	-	-	-	0 0 11½
Wages of four women for half a day, at a shilling each per day	-	-	-	-	0 2 0
					<hr/>
					L.0 7 9

SECT. VIII. IX. X. XI.—On these sections nothing particular deserves to be noticed in this Report.

SECTION XII.—ONE HORSE CARTS.

CARTS here are of the same construction as in the counties to the east, some drawn by two horses and others

the grain is partially dressed by passing once through the winnowing-machine during the process of thrashing, 1s. may on that account be deducted from the expence of thrashing. The sum of 6s. 9d. will then be left as the expence of thrashing eighteen bolls of common oats by the thrashing-mill. In a farm where 700 bolls are annually thrashed, supposing the erection of the thrashing-mill cost L.100, it was before stated that the proportion of money sunk by the erection and repairs, when equally divided among 700 bolls, is somewhat more than 2½d. per boll, or 3s. 4½d. for eighteen bolls. In this case, therefore, the expence of thrashing eighteen bolls by the thrashing-mill amounts altogether to 10s. 1½d. This leaves a balance of 4s. 3¼d. in favour of the thrashing-mill for the thrashing of eighteen bolls, or about 2½d. per boll. If only 300 bolls are annually thrashed, there is a balance in

others by one. The iron axle is pretty much used. One-horse carts, both for farming purposes, and upon the great roads, are deservedly coming into use, and are likely, in time, to be generally employed, unless where the roads are bad, and the district hilly. The advantages of one-horse carts are, that two of them carry at least a third more than a double-horse one, a single

in favour of the flail of $2\frac{1}{4}$ d. for the thrashing of eighteen bolls.

If 1s. 6d. per boll is allowed to the flailman, the thrashing of eighteen bolls will cost L. 1. 7s. This leaves a balance of 16s. $10\frac{1}{2}$ d. in favour of the thrashing-mill for the thrashing of eighteen bolls, or rather more than 11d. per boll, 700 bolls being supposed to be annually thrashed. If only 300 bolls are annually thrashed, the balance in favour of the thrashing-mill is L. 12s. 5d. for the thrashing of eighteen bolls, or $8\frac{1}{4}$ d. per boll; and so on in the correspondent proportion, as the annual number of bolls thrashed is greater or less.

In the preceding calculation, no allowance is made for the money sunk by the purchase of the horses. Indeed, making an allowance of this kind is perhaps unnecessary, as farmers in general do not keep more horses when they have thrashing-mills than they would do on the supposition that they wanted them. At the sametime, the money sunk by the purchase of the horses, as proportioned to the thrashing of a given number of bolls, may be calculated. L. 160 may be stated as the price of four horses, which, on an average, continue fit for work not more than fifteen years. In this time L. 160 at compound interest accumulate to about L. 332. This is an annual balance against the horses of L. 15. 9s.; for in fifteen years L. 15. 9s. lost yearly in succession,

single driver answering in each case; that they give less strain to the carriage; are not so hurtful to the horses; and do less damage to the roads.

The carts in use for carrying hay, or grain in harvest, are made longer in the body than those used for
the

cession, accumulate at compound interest to about L.332 †. There are 313 work days in the year; dividing L.15. 9s. by 313, and halving the quotient, shews the balance for the half of a work day, against four horses on account of the money sunk by their purchase. This balance is near 6d. In half a day, eighteen bolls may be thrashed by a thrashing mill wrought by four horses. The expence, therefore, of thrashing eighteen bolls by the thrashing-mill is near 6d. greater than is stated in the foregoing calculation; and so on in direct proportion to the number of bolls thrashed. When small quantities of grain are thrashed, the expence occasioned by the money sunk on account of the purchase of horses appears to be trifling, but when large quantities are thrashed, it is very considerable.

It is needless to state the comparative expence of thrashing other kinds of grain by the flail and by the thrashing-mill, as the kinds which are most easily or speedily thrashed by the flail, are also most easily or speedily thrashed by the thrashing-mill; and therefore the relative expences may be supposed to maintain much the same proportion that has been stated respecting the oats.

† L.15. 9s. lost year by year in succession during fifteen years, is the same loss with that of L.332 at the end of fifteen years; for L.15. 9s. coming in year by year in succession, would at the end of fifteen years accumulate, when put out at compound interest, to about L.332.

the road, and in proportion to their size lighter. They are contrived so as to answer the wheels and axles of the other kind of carts. The price of a one-horse cart with wheels is about L.12, that of a double-horse cart about L.15.

SECTION XV.—RAKES, HOES, SPADES, SHOVELS.

THERE is nothing so particular in the construction of any of these implements in use here, as to merit a description.

SECTION XVI.—WINNOWER-MACHINES.

WINNOWER machines in this county are all constructed upon the same principle, though, being made with different degrees of exactness in some of their parts, they separate the chaff, the light and small grain, and other small seeds, with different degrees of perfection. This machine has been in use here for
D many

more than fifty years. The prices vary from L.3 to L.7*.

SECTION XVII.—BORERS.

THERE is nothing new in the principal or construction of borers used here, or that is different from those in general use in other places.

SECTION XVIII.—DRAINING TOOLS.

THE common spade, shovel, and pick, are the only draining tools which are used in the county, no mode of draining being practised that requires any other.

SECT. XIX.—Nothing particular occurs on this section.

SECTION

* Those who wish to be informed of the history of the introduction of winnowing-machines into Scotland, may consult the Agricul. Rep. of Roxburgh, written by the Rev. Dr Douglas of Gallashiels.

SECTION XX.—WEIGHING ENGINES.

BESIDES the common balance, the only other weighing engine in use is what is called a steel-yard improved by Mr Low, who was formerly mentioned as the inventor of a new kind of harrow. This is a very convenient engine for weighing any thing of great weight ; and it is well adapted to be removed from one field to another, and to weigh a whole cart load of hay at once. The price of it is from L.6 to L.9.

SECTION XXI.—MISCELLANEOUS ARTICLES.

A machine for dragging together hay, in windrows or in cocks, in order to be put into ricks, is much used in different parts of the county. It consists of two parallel horizontal beams of wood, somewhat curved, with three or four upright pieces of timber inserted between them. A rope is fixed to the end of each of the beams. When the ropes are fastened to the harness of the horses, they drag the machine, applied with its concave side to one end of a windrow or to a cock of hay, to the spot where they are wanted, the horses keeping the windrow or cocks between them. If the cocks are placed in a row, as many will be moved forward as

the horses are able to draw. This machine saves much labour. The price of it is from L.1 to L.1. 10s. See a drawing of it in the Appendix No. 4.

Although prices have been affixed to several of the implements mentioned in this chapter, yet it is proper to remark that this cannot be done with precision, as they vary very materially in different parts of the county. This is occasioned by the difference in the prices of wood, and the quantities of iron applied; some requiring them strong and heavy, others more slender and light.

CHAP.

CHAPTER VI.

INCLOSING.

IN this county there may be upwards of fifty thousand acres inclosed, which has been done mostly by the proprietors. Some of the late inclosures have been executed by the tenants, the landlord advancing the money, and the farmer paying annually from L.6 to L.7 per cent. of interest from the time the money was laid out. We have here almost all the different kinds of fences that are in use.

Stone walls are built either of whinstone or free-stone; they are sometimes built with mortar, and sometimes without it; and are coped either with stone or with turf. If they are built with mortar, and if the materials lie within half a mile, they are commonly executed for about L.6. 6s. per rood *, every expence includ-

D 3

ed.

* The rood is thirty-six square yards.

ed. This kind is generally built about 5 feet high. When built without mortar, the expence may be L.3. 3s. per rood. The price of materials for building stone fences differs very much, according as the rock is more or less easily raised ; and if the distance of carriage is considerable, the expence is greatly increased. The raising of the stones in the quarry varies from fourpence to eightpence per cart load. A rood requires 36 cart loads. The price of building stone walls with mortar is about L.1. 16s. per rood.

The sunk fence, faced with stones on one side, and having a row of thorns planted on the top, is another kind much used in some parts of the county. It costs at least twopence per yard to cast the foundation and raise the bank, preparatory to the masons building the stones, which costs about 8s. 6d. per rood. This fence is generally raised four feet and a half high in stone, with a good cope of sod. A method is likewise in practice of laying the thorns horizontally about three feet high from the foundation of the fence, with their tops projecting about an inch from the face of the wall. In covering them, care must be taken not to hurt the plants, and to place abundance of earth on their roots. In this way they require no cleaning ; and if plants can be procured of sufficient strength and long enough, they thrive better than when planted on the top of the bank ; are reared at far less expence ; and become in the end an excellent fence. The sets should be planted about six inches distant from each other.

The double dry stone fence, commonly called the Galloway dike, is used in some parts of the county. It is generally built about three feet high, and then
covered

covered to the height wanted with stones in an unpolished state in which they are raised from the quarry.

Its rugged appearance, either by frightening the cattle, or by preventing them from coming into contact with the dike, renders it a good fence for cattle of all kinds.

Ditch and hedge is the prevalent fence here. The ditch is made four, five, or six feet wide at top, one at bottom, and three or four feet in depth slopewise. The six feet wide ditch by four deep is made for 2s. per rood of six yards; the five feet by three for 1s. 6d. and the four feet by three for 11d. Some of the fences of this kind are double, having two ditches and a bank in the middle, with a hedge on each side of it. In some cases a row of trees is planted on the top of the bank, which seldom succeed, but which always hurt the hedges. This last way of inclosing, although it may seem to afford an immediate fence, seldom or never, unless on dry land and rich loam, produces good hedges. The one prevents the other from thriving; and their roots being cut off by the ditches, from the soil on both sides, they are soon stunted; and, in damp or wet lands, decay and die. But in wet lands, where the declivity is not great, this method of inclosing is often absolutely necessary. It is likewise often chosen in marches between different properties, when stone fences cannot be obtained, or are found not proper for the soil*.

D 4

The

* It was usual in former times to make streams or rivers the boundaries of estates. This had its convenience from its distinctness; but it prevents the full use of the water for mills

The price of thorns is about 16s. per thousand when purchased; but many of the proprietors raise them in their own nurseries, which is the best way, as in that case they can have them more conveniently of all ages and sizes fit for the different soils. Healthy plants about the thickness of the little finger, are found to grow up soonest to a hedge.

In situations that admit of being summer-fallowed, or cleaned by drilled green crops, the one or the other of these should never be neglected before the planting of the thorns. By either of these preparations, together with the addition of a little dung, the young hedge will gain at least one year in three; and a very considerable expence in cleaning it will likewise be saved.

The best method of pruning hedges is now pretty well understood, although it is not so much attended to as it deserves. It is by slopping them from bottom to top, somewhat in the form of the common roof of a house; others chuse rather to round them a little, approaching to the form of a semicircle. Both make good fences; and give the plants the best possible chance of thriving. The time of pruning thorn hedges is from the end of October to the beginning of April. No hedge ought to be pruned till it is from four to six years old, even on fertile soils; otherwise its vigour would be much impaired. The lateral shoots, however,
and

mills or for irrigation, objects greatly preferable. In the neighbourhood of a mansion house, it is also of great importance to a proprietor to have both sides of a river for plantations, walks, &c.

and stems that may have out-grown the rest, may be advantageously topped when the hedge is younger.

In farms, the size of inclosures varies from four to 40 acres : On the grounds round the seats of some of the proprietors, it is not unfrequently about 100 acres.

Till of late straight lines have been too studiously adhered to in the forming of fences. However desirable this may be in the point of uniformity, and greater convenience for ploughing, the draining of the land ought always to be the object of primary importance ; and the running of the ditches in the direction, which is best suited for conveying the water, should never be neglected.

CHAP.

CHAPTER VII.

ARABLE LAND.

SECTION I.—TILLAGE.

As the method of ploughing is guided by the form and breadth of the ridges adapted to different soils, it will be necessary to treat of ridges first in order. It is usual and very proper to lay out ridges in that direction of the ground which suits best with conveying away the water, and with keeping the land dry. This is a condition which lies at the foundation of all other improvements in agriculture. In this county, the ridges are all straight in well cultivated lands. In the corn farms, ridges vary from nine to twenty feet in breadth. Those of the medium size and upwards admit of being raised or brought into a convex form by two ploughings, in which state the water is more speedily carried away. In the broad ridges, this mode of raising ought never to be neglected, as the omission of it

it will tend to destroy the crops, by keeping the soil continually wet. Ridges of this breadth are convenient for being sown with two casts, and likewise for being ploughed two together, in the subsequent years during the course of the crops for one fallowing. This method, which is termed *casting*, changes every year alternately the commencement of the ploughing from one of the furrows to the other. In some damp lands intended for grass, nine feet ridges are used. They are sometimes raised by one ploughing, but never oftener. When taken up for grain, two are frequently hid into one, though not always; this circumstance being regulated by the nature of the soil and the opinion of the farmer. In very dry soils ten feet ridges are used; and are kept flat by changing the furrow to the crown alternately every ploughing.

In the upland wet parts of the county farmers are under the necessity of retaining the old high ridges from twenty to thirty feet broad. In most of these soils the levelling and altering of the ridges would be productive of much mischief, unless performed in such a manner as to reserve all the good soil for the surface. This might perhaps be done with the spade; but it does not appear how it could be done to advantage with the plough. When this operation has been injudiciously performed with the plough, the bad effect of it has sometimes remained for 40 or 50 years afterwards. Where the good soil is deep, however, the ridges admit of being made straight and narrow by the plough, without producing such a bad effect. Accordingly, this has been done, in many places, within the last eight or ten years.

The method of ploughing ridges of different forms has already been taken notice of. The several kinds
of

of crops require different times and modes of ploughing as well as of harrowing and rolling, which will be considered in the respective sections. But it may here be observed that attention ought always to be paid to plough the land when it is in a dry state, if practicable ; as in all soils in this county, ploughing, when the land is too wet, is very hurtful. The judgment of farmers must no doubt lead them to consider this ; though it may be questioned if so much attention is paid to it in practice as it deserves. The depth of the furrow, or course of the plough, is another consideration of great importance. In good clay and loam, deep ploughing must be very advantageous, by bringing a greater quantity of good soil into action ; by enabling the roots of plants to run deeper and more freely in it ; by making it more retentive of the necessary moisture ; and also by giving it more power to discharge what moisture is superfluous ; for deep ploughing in such soils seem to be attended with all these consequences. A different rule must be applied to thin soils, as turning up the bare earth from below is hurtful to the crops. On this account the plough ought not to work deeper than the good soil. Farmers, in general, are acquainted with these circumstances, and regulate the depth of ploughing accordingly.

The strength usually employed in working the plough is two horses ; though in some places occasionally three, if the nature of the soil requires it, or if deep ploughing is wanted. In all other cases, two stout, middle-sized, and well proportioned horses are fully adequate to the draught. Very heavy horses, though powerful, are detrimental to wet soils, by reason of sinking too deep by their weight.

The quantity of ground ploughed by one plough in a day, the time of labour being nine hours, is on an average from a half to two thirds of a Scotch acre. It must be observed, however, that the quantity is much modified by the nature of the ground.—With respect to the execution of the work or the qualifications of the ploughmen, it may be said that this county, as well as others, produces them of all descriptions from the worst to the best.

Rolling.—Rolling ought always to be avoided when the land is in the least degree wet. It ought also to be applied with caution in the spring. If frosty and cold weather, or a great fall of rain, succeed the operation, rolling will do much mischief. When frosty or rainy weather are apprehended, it will be found more advisable to cover in grass seeds with the harrow, without using the roller, as both the grass and grain crops will in that case succeed better.

Drilling.—Drilling, unless for beans, potatoes, and turnips, is not practised in this county; and it is doubtful if the introduction of it for the white crops would be attended with any advantage. The practice of summer fallowing, grazing, taking white and green crops alternately, and of drilling and hoeing the green crops has either eradicated annual weeds or kept them in sufficient check, in most places, as to the hurting of the white crops; and drilling and hoeing the white crops, where annual weeds are not prevalent, is an additional expence without any apparent utility or profit. The soils where wheat ought to be sown have in general

ral sufficient coherence for retaining the roots of the plant during the frosts of the winter and spring; and even in cases where the plant is thrown out, it is not thought that drilling would prevent it.

Horse-hoeing, hand-hoeing, and weeding, are all in use here; and will be taken notice of in the sections which treat of the kinds of grain or seeds to which they are respectively applied.

SECTION II.—FALLOWING.

WHETHER summer fallowing is necessary or advantageous in well cultivated soils, or whether green crops and the drill husbandry might not supersede its necessity, have often been made questions. Were we to judge of the advantage of summer fallowing from its antiquity, we should at once pronounce it to be proper. Virgil, Varro, and Collumella all speak of it as practised among the Romans, who were highly celebrated for the excellence of their agriculture, and who carried it perhaps to as great a height of perfection as it has ever attained among any other people: And if among such farmers as the Romans, and in such a climate as Italy enjoys, summer fallowing was approved and practised, much more surely may it be admitted as advantageous in such a cold, wet, and variable climate as that of Great Britain.

That

That summer fallowing is absolutely necessary in soils that have been under ill management cannot reasonably be doubted. Some soils are so hard and tenacious, and others so foul, that it is impossible to prepare them properly and in time for producing, in the same season, a crop that would be of any value. On the other hand, it must be admitted that, on loam and dry soils, a course of crops has frequently been raised, without summer fallowing, for a series of years: On such soils, therefore, the propriety of summer fallowing is a question of profit or loss *. On strong clay soils, however, it is highly probable that it is indispensable. In this county it is universally practised on all soils of this kind: And were it not for the improved manner of working summer fallow, introduced among the body of the farmers within the last thirty years, the county would certainly not display its present prosperous appearance. Before this period summer fallowing was executed in a very slovenly manner, except by a few enlightened farmers, who even then understood the utility of working fallow well, and of course reaped its advantage.

The manner of working summer fallow is this: the ground receives its first ploughing in winter, sometimes when land for other purposes cannot be ploughed with propriety. It is again ploughed in the spring, as soon as it is sufficiently dry for the purpose; and if it has not been ploughed at first in a direction across the

* This question will be considered in the section of the course of crops.

thin and poor clay soils, very little danger is to be apprehended from this cause.

From this account of the manner of working summer fallow, it is easy to see if a temporary cessation from producing crops, frequent ploughings, the extirpation of weeds, the complete incorporation of manures, and exposure to the influences of the sun and air, are necessary to pulverise stiff soils, and to recruit and invigorate their vegetative power, that no preparation for drilled crops of any description can ever be so effectual for these purposes.

SECTION III.—COURSE OF CROPS.

The following tables exhibit the average annual expences and profits of twelve different courses of crops upon a Scotch acre.

The land for the different courses is supposed a good clay or loam, or a good turnip soil, that might be let at L.3. 3s. per acre.

The mode of estimating the expences, is by taking as near an average as possible of the value of labour. The work required to prepare the land for the crop is set down as corresponding to the practise of farmers. The quantity of dung, as well as of seed, is stated on the same principle of general practise. The distance at which the produce is estimated to be carried to market,

E

is.

is within six miles of the farm, and the calculation of expence is formed accordingly.

The method of valuing the produce, is by taking neither the greatest nor the least crops that are obtained, but a fair average deduced from observation

The prices of grain are preserved uniform throughout the tables, being the average of the first or highest fiars of the county for the last twelve years *.

The value of clover both for hay and pasture, as well as that of potatoes and turnips, is rated at an average according to observation.

The left hand table shews the expences of one course of crops. The expense of each year's crop in the course is seen in the columns marked respectively. The sum of all the columns added together with the rent, deducted from the amount of the products in the right hand table, will shew the profit. By looking along the lines from left to right, will be seen the different articles of expence expressed in the written column.

Expence.

* Blanded bear, or big, or muirland bear, and small or muirland oats, are not taken into account. The price of potatoe-oats is the medium of only two years, this kind not having been much taken notice of in the county before that period.

For the fiar prices of grain in the county, see the table of them from the year 1654 to 1808, inserted in the Appendix No. 5.

No. 1.—*Product.*No. 1.—*Expense.*

	Fallow and Wheat.		Beans and Peas.		Barley.		Clover for Hay.		Common Oats.		Carried forward.		L. s. d.		L. s. d.	
	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.
Ploughing	2 10 0	0 15 0	1 5 0	-	-	0 10 0	13 4 0	-	-	-	-	-	Wheat, 10 bolls per acre at L.1.12s. p. boll	16 0 0	0 0	0 0
Harrowing	1 0 0	0 1 0	0 8 0	-	-	0 4 0	7 15 6	-	-	-	-	-	Beans & peas, 7 bolls per acre, at 25s. per boll	- 7 2 11	-	-
Dunging*	6 12 0	3 6 0	-	-	-	-	-	-	-	-	-	-	Barley, 7 bolls per acre, at L.1. 4s. 7d. per boll	- 8 12 1	-	-
Seed & sowing	1 4 0	1 17 6	0 18 6	1 0 0	19 10 0	2 4 0	-	-	-	-	-	-	Hay, 200 stone per acre, at 9d. per stone	7 10 0	0 0	0 0
Shearing	0 16 0	0 11 0	11 0 0	-	0 11 0	3 2 4	-	-	-	-	-	-	Clover fog per acre	- 1 0 0	-	-
Carting & stacking	0 6 0	0 5 0	5 0 0	-	0 5 0	-	-	-	-	-	-	-	Common oats, 8 bolls per acre, at 19s. 4d. per boll	- 7 14 8	-	-
Thrashing & dressing	0 11 0	0 5 0	7 0 0	-	0 7 0	-	-	-	-	-	-	-	Wheat straw	- 2 0 0	-	-
Cleaning & dried beans	-	-	0 10 0	-	-	-	-	-	-	-	-	-	Beans & peas straw	- 2 10 0	-	-
Mowing	-	-	-	-	0 5 0	-	-	-	-	-	-	-	Barley straw	- 1 10 0	-	-
Making hay	-	-	-	-	0 4 0	-	-	-	-	-	-	-	Oat straw	- 1 10 0	-	-
Carrying to market	0 5 0	0 5 0	5 0 0	15 0 0	5 -	-	-	-	-	-	-	-	Expenses carried forward to be subtracted	49 3 4	-	-
	13 4 0	7 15 6	3 19 6	2 4 0	3 2 4	30 5 4	-	-	-	-	-	-	Divide by the number of years in the course—6	6 6 4	-	-
															1 1 0 ¹ / ₂	-

* At the rate of 36 cubic yards of dung, at 5s. per yard, the surplus is allowed for the expense of carting and spreading. For the number of ploughings and harrowings, and the quantity of seed, see the sections which treat of the different kinds of crops, and of the reparations requisite for them. £ 2

No. 2.—*Product.*No. 2.—*Expense.*

	Turnips.		Potatoe-oats *.		Clover for Hay.		Potatoe-oats.		Carried forward.		L. s. d.	
	L. s.	d.	L. s.	d.	L. s.	d.	L. s.	d.	L. s.	d.	L. s.	d.
Ploughing	2	0	0	10	0	—	0	10	0	12	2	6
Harrowing, &c.	1	0	0	4	0	—	0	4	0	3	7	4
Dunging †	8	5	0	—	—	—	—	—	2	4	0	—
Seed	0	2	6	1	4	10	1	0	1	4	10	3
Cleaning & hocking	0	15	0	—	—	—	—	—	3	7	4	—
Shearing	—	—	0	11	0	—	—	—	—	—	—	—
Carting & stacking	—	—	0	5	0	—	0	5	0	—	—	—
Thrashing & dressing	—	—	0	7	6	—	0	7	6	—	—	—
Mowing	—	—	—	—	0	5	0	—	—	—	—	—
Making hay	—	—	—	—	0	4	0	—	—	—	—	—
Carrying to market	—	—	0	5	0	0	15	0	5	0	—	—
	12	2	6	3	7	4	2	4	0	3	7	4
	Four years rent										4	21
											1	2
											12	12
											0	—
											L. 33	13
											2	—

Turnips
Potatoe-oats, 8 bolls per acre, at L. 1. 4s. 4d.
per boll
Hay, 200 stone per acre, at 9d. per stone
Clover fog
Potatoe-oats, 9 bolls
Straw of both crops, at L. 1. 10s. per crop

Carried forward
Divide by—4

L. 1 2 7½

* Potatoe-oats are stated as a crop in most of the courses which are mentioned in the following tables; but if common oats are substituted, the nature and profit of the courses will not be materially altered. The preparation of the land is the same in both cases; and though potatoe oats bring higher prices than the common sort, yet, unless they are sown on very rich soils, their produce usually falls short of that of common oats, as much as, or even more than, the price of the latter, falls short of the price of the former.

† At the rate of 20 cwt. per acre.

The same observation is applicable to all the other crops.

	Turnips.			Potatoe oats.			Clover for Hay.			Wheat.			Carried forward.					
	L. s.	d.		L. s.	d.		L. s.	d.		L. s.	d.		L. s.	d.		L. s.	d.	
Ploughing	2	0	0	10	0	-	-	0	10	0	12	2	6	-	-	6	0	0
Harrowing, &c.	1	0	0	4	0	-	-	0	4	0	3	7	4	-	-	9	14	8
Dunging	8	5	0	-	-	-	-	-	-	-	-	-	-	-	-	7	10	0
Seed, &c.	0	2	6	1	4	10	1	0	1	4	10	3	16	-	-	3	0	0
Cleaning & hoeing	0	15	0	-	-	-	-	-	-	-	-	-	-	-	-	36	16	8
Shearing	-	-	-	0	11	0	-	-	0	11	0	-	-	-	-	34	1	10
Carting & stacking	-	-	-	0	5	0	-	-	0	5	0	-	-	-	-	Carried forward		
Thrashing, &c.	-	-	-	0	7	6	-	-	0	7	6	-	-	-	-	Divide by—4		
Mowing	-	-	-	-	-	-	-	0	5	0	-	-	-	-	-	2	14	10
Hay making	-	-	-	-	-	-	-	0	4	0	-	-	-	-	-			
Carrying to market	-	-	-	0	5	0	0	15	0	5	0	-	-	-	-	L. 0	13	8½
	12	2	6	3	7	4	2	4	0	3	16	0	21	9	10			
	Four years rent															12	12	0
																L. 34		
																1		

No. 4.—Product.

No. 4.—Expense.

	Turnips.			Barley.			Clover for Hay.			Potatoe- oats.			Carried forward.			Turnips Barley, 7 bolls Hay, 200 stone Clover fog Potatoe-oats, 9 bolls Straw of both crops			L. s. d.		
	L.	s.	d.	L.	s.	d.	L.	s.	d.	L.	s.	d.	L.	s.	d.	L.	s.	d.	L.	s.	d.
Ploughing	2	0	0	0	10	0	-	-	0	10	0	12	2	6	-	-	-	-	6	0	0
Harrowing	1	0	0	4	0	-	-	-	0	4	0	3	0	6	-	-	-	-	8	12	1
Dunging	8	5	0	-	-	-	-	-	-	-	-	2	4	0	-	-	-	-	7	10	0
Seed, &c.	0	2	6	18	0	1	0	0	1	4	10	3	7	4	-	-	-	-	1	0	0
Cleaning & hoeing	0	15	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	19	0
Shearing	-	-	0	11	0	-	-	-	0	11	0	-	-	-	-	-	-	-	3	0	0
Carting & stacking	-	-	0	5	0	-	-	-	0	5	0	-	-	-	-	-	-	-	37	1	1
Thrashing & dressing	-	-	0	7	6	-	-	-	0	7	6	-	-	-	-	-	-	-	33	6	4
Mowing	-	-	-	-	0	5	0	-	-	-	-	-	-	-	-	-	-	-	3	14	9
Making hay	-	-	-	-	0	4	0	-	-	-	-	-	-	-	-	-	-	-	L.0	18	7½
Carrying to market	-	-	0	5	0	15	0	0	5	0	-	-	-	-	-	-	-	-			
	12	2	63	0	6	2	4	0	3	7	4	20	14	4	-	-	-	-			
	Four years rent															12	12	0			
																L.33 6 4					

Carried forward

Divide by—4

	Turnips.			Wheat.			Clover for Hay			Potatoc- oats.			Carried forward.			Turnips			Wheat, 6 bolls			Hay, 200 stone			Clover fog			Potatoc-oats, 9 bolls			Straw of both crops			L. s. d.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
Ploughing	2	0	0	0	10	0	-	-	0	10	0	12	2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Carried forward

Divide by—4

L. 1 0 9½

No. 6.—*Product.*No. 6.—*Expense.*

	Fallow and Wheat.		Clover for Hay.		Potatoes.		Carried forward.			L. s. d.	
	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.		L. s. d.	L. s. d.
Ploughing	2 10 0	—	—	—	0 10 0	14 17 0	—	—	Wheat, 10 bolls	16 0 0	0 0 0
Harrowing •	1 0 0	—	—	—	0 4 0	2 4 0	—	—	Hay, 240 stone	9 0 0	0 0 0
Dunging	8 5 0	—	—	—	—	—	—	—	Clover fog	1 0 0	0 0 0
Seed	1 4 0	1 0 1	4 10	—	—	3 7 4	—	—	Potatoes-oats, 10 bolls	12 3 4	0 0 0
Shearing	0 16 0	—	0 11 0	—	—	—	—	—	Wheat straw	2 0 0	0 0 0
Carting and stacking	0 6 0	—	0 5 0	—	—	—	—	—	Oat straw	1 10 0	0 0 0
Thrashing, &c.	0 11 0	—	0 7 6	—	—	—	—	—	Carried forward	41 13 4	0 0 0
Mowing	—	00 5 0	—	—	—	—	—	—	Divide by—4	33 0 4	0 0 0
Making hay	—	00 4 0	—	—	—	—	—	—		8 13 0	0 0 0
Carrying to market	0 5 0	0 15 0	0 5 0	—	—	—	—	—		L. 2 3 3	0 0 0
	14 17 0	2 4 0	3 7 4	20 8 4							
	Four years rent				12 12 0						
					L. 33 0 4						

NO. 7.—Product.

NO. 7.—Expense.

	Turnips.		Barley.		Clover for Hay.		Wheat.		Carried forward.			
	L.	s. d.	L.	s. d.	L.	s. d.	L.	s. d.	L.	s. d.	L.	s. d.
Ploughing	2	10 0	0	10 0	-	-	0	10 0	12	12 6	Turnips	6 0 0
Harrowing	1	0 0	4	0 -	-	-	0	4 0	3	0 6	Barley, 7 bolls	8 12 1
Dunging	8	5 0	-	-	-	-	-	-	2	4 0	Hay, 200 stone	7 10 0
Seed	0	2 6	18	0 1	0	0 1	12	0 -	3	14 6	Clover fog	1 0 0
Cleaning & hoeing	0	15 0	-	-	-	-	-	-	-	-	Wheat, six and a half bolls	10 8 0
Shearing	-	-	0	11 0	-	-	0	11 0	-	-	Straw of both crops	3 0 0
Carting & stacking	-	-	0	5 0	-	-	0	5 0	-	-	Carried forward	36 10 1
Thrashing, &c.	-	-	0	7 6	-	-	0	7 6	-	-	Divide by—4	34 3 6
Mowing	-	-	-	-	0	5 0	-	-	-	-		2 6 7
Making hay	-	-	-	-	0	4 0	-	-	-	-		L. 0 11 7½
Carrying to market	-	-	0	5 0	15	0 0	5	0 -	-	-		
	12	12 6	3	0 6	2	4 0	3	14 6	21	11 6		
	Four years rent								-	12 12 0		
									L. 34 3 6			

No. 8.—*Product.*No. 8.—*Expense.*

	Fallow and wheat.	Clover for pasture.	Pasture.	Potatoes.	Carried forward.			
	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.		L. s. d.	
Ploughing	2 10 0	—	—	—	—	Wheat, 10 bolls	—	16 0 0
Harrowing	1 0 0	—	—	—	—	Clover for pasture	—	6 6 0
Dunging	8 5 0	—	—	—	—	Pasture, second year	—	4 10 0
Seed	1 4 0	1 0 0	—	—	—	Potatoes-oats, 10 bolls	—	12 3 4
Shearing	0 16 0	—	—	—	—	Wheat straw	—	2 0 0
Carting & stacking	0 6 0	—	—	—	—	Oat straw	—	1 10 0
Thrashing, &c.	0 11 0	—	—	—	—			
Carrying to market	0 5 0	—	—	—	—	Carried forward	—	42 9 4
	14 17 0	1 0 0	—	—	—	Divide by—5	—	35 10 4
			Five years rent	3 17 4	19 15 4			6 19 0
				15 15 0	—			L. 1 7 9½
					L. 35 10 4			

No. 9.—*Product.*

No. 9.—*Expense.*

	Fallow and Wheat.	Barley.	Clover for Hay.	Common oats.	Carried forward.		L.	s.	d.
	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.	Wheat, 10 bolls	16	0	0
Ploughing	2 10 0	1 5 0	—	—	—	Barley, 6 bolls	7	9	6
Harrowing	1 0 0	8 0 —	—	—	—	Hay, 200 stone	7	10	0
Dunging	8 5 0	—	—	—	—	Clover fog	1	0	0
Seed	1 4 0	18 6 1	0 0 0	19 10 3	2 4	Common oats, 7 bolls, at 19s. 4d. per boll	6	15	4
Shearing	0 16 0	11 0 —	—	11 0 —	—	Wheat straw	2	0	0
Carting & stacking	0 6 0	5 0 —	—	5 0 —	—	Barley straw	1	10	0
Thrashing	0 11 0	7 6 —	—	7 6 —	—	Oat straw	1	10	0
Mowing	—	—	0 5 0	—	—		43	12	10
Making hay	—	—	0 4 0	—	—	Carried forward	39	18	4
Carrying to market	0 5 0	5 0 0	15 0 0	5 0 —	—	Divide by—5	3	14	6
	14 17 0	4 0 0	2 4 0	3 2 4	3 4		L. 0	14	10½
	Five years rent						15	15	0
							L. 39	18	4

No. 10.—*Product.*No. 10.—*Expense.*

	Fallow and Wheat.			Clover for Hay.			Potatoe-oats.			Beans & peas drilled.			Wheat.			Carried forward.		
	L.	s.	d.	L.	s.	d.	L.	s.	d.	L.	s.	d.	L.	s.	d.	L.	s.	d.
Ploughing	2	10	0	-	-	0	10	0	15	0	10	0	14	17	0			
Harrowing	1	0	0	-	-	0	4	0	1	0	4	0	2	4	0			
Dunging	8	5	0	-	-	-	-	4	0	0	-	-	3	7	4			
Seed	1	4	0	1	-	1	4	10	1	17	6	1	12	0	8	9	6	
Cleaning & hoeing	-	-	-	-	-	-	-	0	10	0	-	-	3	15	6			
Shearing	0	16	0	-	-	0	11	0	11	0	12	6	-	-	-			
Carting & stacking	0	6	0	-	-	0	5	0	5	0	5	0	-	-	-			
Thrashing, &c.	0	11	0	-	-	0	7	6	0	5	0	7	6	-	-			
Mowing	-	-	0	5	-	-	-	-	-	-	-	-	-	-	-			
Making hay	-	-	0	4	-	-	-	-	-	-	-	-	-	-	-			
Carrying to market	0	5	0	15	0	5	0	5	0	5	0	5	0	-	-			
	14	17	0	2	4	0	3	7	4	8	9	6	15	6	32	13	6	
	Six years rent												18	18	0			
													£51 11 6					
													61	7	10			
													51	11	6			
													9	16	4			
													L.1	12	8½			

* At the rate of 44 cubic yards of dung, at 5s. per yard. The surplus is allowed for the expense of carting and spreading.

No. 11.—*Expence.*

NO. 11-11-11

	Potatoes.	Potatoes.	Clover for Hay.	Potatoes.	Carried forward.
	L. s. d.	L. s. d.	L. s. d.	L. s. d.	L. s. d.
Ploughing	2 0 0	10 0	-	0 10 0	15 18 0
Harrowing	0 8 0	4 0	-	0 4 0	3 7 4
Dunging	8 5 0	-	-	-	2 4 0
Seed	1 4 0	1 4 10	1 0 0	1 4 10	3 7 4
Planting	0 6 0	-	-	-	-
Cleaning & hoeing	0 15 0	-	-	-	-
Taking up & housing	1 10 0	-	-	-	-
Shearing	-	0 11 0	-	0 11 0	-
Carting & stacking	-	0 5 0	-	0 5 0	-
Thrashing, &c.	-	0 7 6	-	0 7 6	-
Mowing	-	-	0 5 0	-	-
Making hay	-	-	0 4 0	-	-
Carrying to market	1 10 0	5 0 0	15 0 0	5 0	-
	15 18 0	3 7 4	4 0 3	7 4	24 16 8
			Four years rent		12 12 0
					L. 37 8 8

	L. s. d.	L. s. d.
1 Fallow, wheat, beans & peas, barley, clover hay, common oats,	1 1 0½	1 — —
2 Turnips, potatoe-oats, clover-hay, potatoe-oats	1 2 7½	2 — —
3 Turnips, potatoe-oats, clover-hay, wheat,	0 13 8½	3 — —
4 Turnips, barley, clover-hay, potatoe-oats,	0 18 7½	4 — —
5 Turnips, wheat, clover-hay, potatoe-oats,	1 0 9½	5 — —
6 Fallow, wheat, clover-hay, potatoe-oats,	2 3 3	6 — —
7 Turnips, barley, clover-hay, wheat,	0 11 7½	7 — —
8 — — — — —	0 0 0	8 Fallow, wheat, clover-pasture, potatoe-oats,
9 Fallow, wheat, barley, clover-hay, common-oats,	0 14 10½	9 — —
10 Fallow, wheat, clover-hay, potatoe-oats, beans & peas drilled, wheat,	1 12 8½	10 — —
11 Potatoes, potatoe-oats, clover-hay, potatoe-oats,	4 5 11	11 — —
12 Potatoes and wheat alternately	3 6 0	12 — —

Although all the courses of crops mentioned in the preceding tables, and others that are not mentioned, may be occasionally followed in the county, yet there are but six of them which are prevalent, or in general use, viz Nos. 1, 2, 4, 6, 8, 9. In order, therefore, to know the average capital employed, in general practice, in farming an acre of land, it will only be necessary to calculate the average expence of these six courses :

	L.	s.	d.
1 Summer fallow, wheat, beans & pease, barley, clover, oats	8	3	10
2 Turnips, potatoe-oats, clover, potatoe-oats,	8	8	3
4 Turnips, barley, clover, potatoe-oats,	8	6	7
6 Summer fallow, wheat, clover, potatoe-oats,	8	5	1
8 Summer-fallow, wheat, clover for pasture, pas- ture, potatoe-oats	7	2	0½
9 Summer-fallow, wheat, barley, clover, common oats,	7	19	8
	<hr/>		
Divide by—6	48	5	6½
	<hr/>		
	1.8	0	11

The average profit of these six courses calculated in the same manner amount to :

	L.	s.	d.
When the clover is made into hay	1	4	8½
When used as pasture	0	19	4
	<hr/>		
Divide by—2	2	4	0
	<hr/>		
Medium profit	1	2	0½

If

If the medium between the profits accruing from **Rehlay** and pasture courses, is taken as the true average profit, the farmer's account will stand thus :

Average capital employed in farming an acre			
of land	L	8	0 11
Interest of this at five per cent.....	0	8	0½
Average profit	1	2	0¼
Deduct the interest of the average capital...	0	8	0½
<hr/>			
Remaining profit	L	0	13 11¼

From this last sum must be deducted the property tax ; proportionate expence of necessary repairs on the farm ; and casualties, such as the death of live stock, and loss by bad payments, some of which cannot be easily estimated with accuracy, but, upon the whole, must amount to a great proportion of the remaining profit.

From this statement, it appears that the real profits of the farmer are not great, and that his occupation is by no means a lucrative one. This is easily accounted for by considering that the rent of land has of late risen above its just level. This rise has no doubt been occasioned by the extraordinary competition to obtain farms, founded partly on the erroneous opinion of farming being a profitable occupation, and partly on the rise of the prices of cattle and grain. Indeed, for the reason last mentioned, farming, for several years past, must have been a lucrative employment to those who had old leases ; but this reason does not apply in the same manner to those who have new ones. If the country shall continue to prosper, and the price of the farmers

F

commodities

commodities to increase as they have of late years done, the pressure of high rents may not perhaps be very severely felt by the tenants; but if affairs should take a retrograde course, the excessive rise of rents will work its own cure, by a general bankruptcy among the tenants, to the immediate loss of the landlord, and to the ultimate hurt of the public.

It may now be proper to make some observations upon the different courses of crops stated in the tables.

No. 1.—*Fallow, wheat, beans, and pease, barley, clover, oats.*—This course has been followed for a number of years past, and is still followed by not a few of the farmers in the county. It is justly esteemed as distributing the labour more equally through the season, and as facilitating the putting in of the seeds, according to their proper seasons. Although, at first sight, it may not appear so profitable as some of the courses which follow, yet it is less subject to accidents arising from bad seasons than most of them, and upon strong clay soils it ought not to be rashly given up.

No. 2.—*Turnips, potatoe-oats, clover, potatoe-oats.*—This is a good course, and very suitable to soils that are of a light, dry, or loamy nature.

No. 3.—*Turnips, potatoe-oats, clover, wheat.*—The substituting of wheat for oats in the last year of the course, is considerably inferior in value to the oat course mentioned in the preceding number; as wheat after clover is a very uncertain crop in this county.

No.

No. 4.—*Turnips, barley, clover, potatoe-oats.*—This course falls short of that of number 2d, in as far as barley is generally less productive than oats; but in some soils barley may be more adviseable, as grass seeds are usually more certain of succeeding, or at least always as certain after it as after any other crop whatever.

No. 5.—*Turnips, wheat, clover, potatoe-oats.*—The taking of wheat immediately after turnips affords more profit than when taken last, as in No. 3d. This course requires less wheat seed, and there is a greater certainty of a good increase of oats when they are taken last.

No. 6.—*Fallow, wheat, clover, potatoe-oats.*—This course, if the clover succeeds, (which, however, is not always the case,) is the most profitable of any of the common ones, and is followed by some intelligent farmers in the county.

No. 7.—*Turnips, barley, clover, wheat.*—This course is seldom followed here; and it appears to be less profitable than any of those which are mentioned in the tables.

No. 8.—*Fallow, wheat, clover for pasture, pasture, potatoe-oats.*—This is a good course, and well adapted to the grazing system of husbandry prevalent in West-Lothian. If the grass succeeds after the wheat, it is a sure course both for improving the soil, and for affording a reasonable return.

No. 9.—*Fallow, wheat, barley, clover, common-oats.* This is one of the worst of all the courses mentioned in the tables; and, what is to be regretted, it is followed by not a few farmers in this county. It ought to be laid entirely aside as a systematic course. No person taking land at the present rents can pursue such a bad course, without bringing his affairs to ruin.

No. 10.—*Fallow, wheat, clover, potatoe-oats, beans and peas drilled, wheat.*—This course is found to succeed on rich and well cultivated loams, but is unsuitable to thin and weak soils.

No. 11.—*Potatoes, potatoe-oats, clover, potatoe-oats.*—This course answers well on a soil that is rather dry than wet. It is more profitable than any of the other courses which have been mentioned, but it can be carried on with convenience only in particular situations.

No. 12.—*Potatoes and wheat alternately.*—Where dung can be procured in sufficient quantity, this course may be continued for a number of years. I once run it the length of twelve, but found the potatoes getting smaller in size, and the produce consequently diminished.

Potatoe courses of all kinds, it is to be observed, can be carried on upon a great scale only at a moderate distance from towns, where dung can be obtained in abundance, where a sufficient number of workers can be easily procured, where the demand for potatoes is good, and where the distance of carriage is short. But,
even

even on a small scale, it is profitable for domestic purposes to every farmer, and ought not to be neglected, where the soil and circumstances are suitable.

In the upland parts of the county, the regular courses of crops cannot be so easily followed, owing to the dampness both of the climate and soil. Their staple grain is and ought to be the early kinds of oats, which answer their soils best. Attention should be paid to clean the land, and to lay it to pasture with rye-grass, white and yellow clovers, and narrow leaved plantain.*

F 3

In

* On the moor sides, they take three crops of oats, and then they let the land lie ley, or at rest, without sowing any grass seeds. When the ground has recovered some fertility, they lime it moderately, add any little dung they can spare, and then break it up in order to take other three crops of oats. The first crop is but indifferent, but the second and third crops are generally good. Clover does not succeed at all in the higher parts of the county, nor even rye-grass. The land is so light that it throws the plants out in the winter, during the frosty season. Near Whitburn also, oats is the surest crop. They prefer the Carnwath oat for general sowing. The potatoe oat thrives very well : But if the season is wet, a great deal is lost in the harvesting. They take two crops of oats, and then lay down the land with rye-grass alone ; for where the land is mossy, it throws out the clover. It remains four years in grass. The first crop is made into hay, the other three are pastured. They then break up for two crops of oats as before, and so on.

On the moor edges, near Lord Polkemmet's coal pits, the rent of land may be about 8s. per acre. The rent of land of ordinary quality, near Whitburn, ten years ago, was about

10s.

In the preceding tables, clover hay is generally stated as one of the crops in the different courses. It may be remarked that, in situations where dung cannot be procured from a town, it must be more prudent, as well as profitable, to consume the hay on the premises than to sell it. By doing this, there is a saving of grain, as less of it is requisite for the horses when they are fed with hay. In farms where cattle are fed with turnips,

10s. per acre; and of the best not above fifteen. But it has now risen to L.2, and some as high as L.3. The rent of the grass land is as high as that of the arable, owing to the central situation of Whitburn between Edinburgh and Glasgow, which induces several people to take up the trade of dealing in horses and cattle, sending them to either market that is likely to answer best. The small cattle they feed fat, and the larger cattle half fat, and send them to East Lothian to be fed full fat. This dealing in cattle enables them to give higher rents for the grass lands.

John Calder at Redsmill, near Whitburn, is the greatest improver in that neighbourhood. He has taken some fields near Whitburn from Mr Gordon, on a lease of eight years, on the following terms: Mr Gordon pays for the lime laid on the land at the rate of 50 bolls of shells or unslacked lime per acre. This costs him 2s. 6d. per boll, or L.6. 5s. per acre.

The carriage costs the tenant	-	L.2	18	8
Dung at 5s. per cubic yard	-	6	15	0
The spreading of the lime and dung	-	0	5	0
Six ploughings at 12s. each, harrowing being included, and the blowing of stones	-	3	12	0

L.19 15 8

The

a portion of hay, together with the turnips, will fatten them sooner than turnips alone. This method contributes to the health of the animals, and very materially to the good quality of the beef. In this way, a greater number of cattle may be fed on the farm, and, by consequence, a greater quantity of manure produced than could otherwise be obtained.

It will naturally occur that lime has not been mentioned as a manure in the preceding tables. The reason of the omission was to avoid complication as much as possible. In fact, when land is limed at the rate of L.5. 5s. per acre, with half dung at the same time, the table of expence is not much increased, and the general result is not greatly influenced. This mode of manuring, however, is supposed preferable to dung

F 4

alone,

The rotation stipulated in the lease is as follows: 1st year fallow; 2d, oats and grass seeds; 3d, clover and rye-grass for hay; 4th, pasture; 5th pasture; 6th, oats; 7th, oats and grass-seeds; 8th, hay*.

The rent is L.2. 10s. per acre.

Mr Calder has tried red wheat, but says that there is no comparison between 12 bolls of good potatoe-oats, and 10 bolls of bad wheat. His crop of oats in the present year 1808 was much injured by the grub. He tried, in vain, rolling, lime, and salt.

* If it be admitted that this course is consistent with the rules of good husbandry for the first six years, it cannot be granted that it merits commendation for the last two. In these years, it is at variance with some of the first principles of proper culture, and is condemned by the practice of the most enlightened farmers.

alone, even though it is given at the full rate. In the first year of the course, the difference of the produce is trifling; but in the subsequent years, the produce is generally increased, and the quality of the grain improved by the lime manure. Grass, in particular, grows with greater luxuriance, and is, at the same time, more nutritious. Lime is seldom given oftener than once in eight or ten years.

SECTION IV.—WHEAT.

WHEAT is most frequently sown on a clean summer fallow; and if the land has been fully limed, a moderate quantity of dung is applied. It is sometimes sown after drilled beans, clover, and also after potatoes. The best time of sowing is from the middle of September to the end of October, as the seasons and soil suit. The later the time of sowing is, the more seed is required. Winter wheat is sometimes taken after turnips, but it seldom proves so good a crop as to give encouragement to the practice. The seed is always sown broadcast, and properly covered in the ground by harrowing; and, in order to keep it as dry as possible, water-furrowing is invariably practised. The quantity of seed is regulated by the nature of the soil. If the soil has been prepared by summer fallowing, from two to three firlots or bushels are sufficient. The other preparations

preparations which have been mentioned require a boll or four bushels.

Seed and sort.—As we find it for our advantage to change the seed frequently, on account of having a greater increase, and grain of a better quality, we have of course considerable varieties of it procured from the adjacent counties, and also from England, chiefly from the counties of Essex and Kent. The sorts most in use are those which go by the following names: The woolly-eared, and the thin chaffed. Of the last of these sorts there seem to be many varieties. All of them are occasionally tried, as they happen to be met with by the farmer; and the sort which is found to produce the most abundant increase, and grain of the best quality, is retained. The woolly-eared sort is mostly given up, as, in some seasons, it seems more liable to be affected by mildew; and in wet seasons, by imbibing more moisture in to the ear, is consequently more apt to vegetate, and in this way the quality of the grain is damaged. The old red wheat is accounted the hardiest of all the sorts, and most suitable to upland cold soils. If raised on good soils, it is found to yield as much flour as any of the kinds, although the bakers are not so fond of it on account of its colour. There is another kind, of a yellow colour, which has been tried here, and is found to be productive. It requires to be sown early in September, as it is rather later in ripening than the other sorts. It is perhaps impossible to give discriminative names to the several varieties, as they differ almost in every county. The best rule for selecting the sorts is, “to retain those which have the ear most closely

closely set, and the seeds most numerous; always keeping in view the kind which is found least subject to the ordinary diseases."

Smut and washing the seed.—In order to prevent smut, all good farmers here never sow the seed without washing it in a strong pickle of salt water, and skimming off the light wheat. As much salt is put into the water as to make a fresh hen egg swim in it. Urine will likewise answer the purpose. The seed is not allowed to remain in the pickle longer than a minute or two, during which it is once or twice stirred round. After this it is thrown on an earthen floor, and quick-lime is dusted through a riddle on the wet seed. The seed is then turned over twice, and in the course of the turnings, quick-lime is applied with the riddle as before, in order to dry it properly for being sown. It is always proper to sow the seed on the same day in which it is washed in the pickle. If any accident happens to prevent sowing on that day, it ought not to be allowed to remain in the sack, but must be spread pretty thin on a dry floor, to lie till it is taken out to be sown, otherwise its vegetative power might be hurt, if not even destroyed, by which the crop would be lost to the farmer.

Except in two instances, I have always managed wheat seed in the way which has been described; and I have never once, in the course of forty year's practice, been deceived, nor had any of my crops damaged by smut. In all that time I tried it only twice without washing; and although in these years the seed was got from England, and to appearance wholly free from smut, yet I found

found in the crops a tendency to that distemper. It was not to such extent as to do any material hurt, but I was convinced, that if I had sown it a second time, I should have suffered loss.

It deserves to be remarked, that old seed is more apt than new to receive damage by not being sown instantly after the washing. The reason of this seems to be, that by being more advanced towards a state of decay, by imbibing the liquor more readily on account of being drier and more porous, its vegetative power is more liable to be impaired or destroyed, if it is not committed speedily to the earth. It ought also to be attended to, that the use of urine is more apt than that of salt water, to destroy the vegetative power of the seed. Old seed, without being washed in pickle, will not prevent smut, whatever theorists may advance to the contrary. It likewise deserves observation, that good clean culture, on clay soils and loam, has a tendency to prevent smut, while, on the other hand, bad culture and weak soils seem to encourage it.

There is a distemper to which wheat is subject, and which frequently proceeds from the land being too weak for producing a good crop. At other times, it is occasioned by a severe winter, or a cold, frosty, and late spring, by which a considerable number of plants are hoven out of the ground, and the stalks are thus rendered too thin for supporting one another. When the crop is thin, new sprouts often shoot out from the roots, and usually incline to the ground, which is always detrimental to the crop.

Mildew,

Mildew, red gum or ochre.—In some seasons, we feel the bad effects of these distempers. Various causes of them have been assigned by theoretical writers; but no preventative or remedy has hitherto been found out, nor in all probability ever will, as they seem to be occasioned by the influence of the atmosphere, over which man has no controul.

Reaping and harvesting.—Reaping here is performed with the sickle. The sheaves are bound and set upright in shocks of twelve sheaves. Two additional sheaves are laid as caps along the top of the shock, with their tops slanting towards the ground. This is done to prevent damage in the event of wet weather. If the season has the appearance of proving dry, the shock is sometimes formed with six or eight sheaves without caps. The sheaves are allowed to remain in this state three days, or more if found necessary, for drying them properly. They are then taken home in carts to the barn-yard, and built in round stacks, which are carried up as high as is found convenient, and finished with a conical top. The conical part of the stacks is covered as soon as possible with wheat straw, which is tied down with ropes made of oat straw, laid across the thatch, and intersecting one another in the form of net-work. After this the stacks are considered as perfectly secure from rain.

Securing the bottom of stacks from being damaged is a point of considerable importance. For this purpose it is customary to put straw or brushwood under the first layer of sheaves. With the same view, the building of the stack is usually begun by placing the
centre

centre sheaves on their bottoms, inclining them gradually more and more to a horizontal position towards the circumference of the circle. But the best foundation of a stack is one consisting of solid stone pillars, in the form of truncated pyramids or cones, one pillar being placed in the centre, and six at equal distances from one another in the circumference of a circle. The pillars are set on flags of sufficient strength to hinder them from sinking too deep into the ground. They are 18 inches in height, each having a projecting cap of stone, in order to prevent vermin from getting into the stack. The cap is formed with a cavity in the middle, exactly fitted to the top of the pillar. Straight beams of wood are laid on the pillars from the centre to the circumference, and also from one pillar to another round the circumference. The figure is a regular hexagon divided into equilateral triangles. Pieces of smaller timber are laid across the beams, if found necessary for supporting the sheaves. The expence of a structure of this kind may be about L.2.

In the building of stacks, it is also of great consequence to raise the tops of the sheaves a little above the horizontal position from the base of the cone to its top. This throws the rain better off, and tends very materially to prevent it from lodging in the stack, and from damaging both the grain and straw. The height of the cone varies in practice according to the inclination of the farmer, or taste of the builder : but when the angle at its base is small, the stack is more liable to be damaged by rain.

The time of wheat harvest is usually from the last week of August to the middle of September.

Thrashing.

Thrashing.—Thrashing is performed by thrashing-mills as formerly described, though in a few instances by flails.

Produce.—The produce per acre varies from five to 16 bolls, according to the seasons, the quality of the soils, and the husbandry.

Price.—The average price per boll, for the last 1 years, is L.1. 12s. * See the table of fiars in the Appendix, No. 5.

SECTION V.—RYE.

LITTLE, if any rye, is sown in this county. The other kinds of grain are better suited to the respective soils, and are more profitable.

SECTION VI.—BARLEY.

BARLEY is usually sown after beans and pease. If these have been drilled, a ploughing in autumn and another

* The prices of the highest class or best kind of grain are meant.

other at seed time, are sometimes all that are given **before** sowing the barley. But if the barley does not **follow** a drilled crop, the land is thrice ploughed, once in **autumn**, and twice in the spring, the last ploughing **being** immediately previous to the sowing. Barley is **likewise** taken after turnips, and occasionally after potatoes, as suits best with the future views of the farmer.

In this case, the land receives one ploughing, or two, as is **judged** requisite. When the land receives one ploughing, it is given in the spring; and when two, the first is **given** sometimes in autumn and sometimes in the **spring**, and the second immediately before sowing. It has also been customary to sow barley after wheat, the land receiving three ploughings, one in autumn, another in the spring as soon as the land is dry, and the third at seed time. This is a bad course, and ought not to be followed by the farmer, unless when he is forced by necessity, by the failure of grasses among the wheat, or by some unlucky accident arising from the season. An excellent crop of barley sometimes follows oats on land newly broken up from old grass. In this case three ploughings and a complete harrowing are necessary to break and pulverise the soil. The times of the different ploughings are the same in this as in the case last mentioned, and the harrowing ought to be given chiefly after the second ploughing.

Barley is always sown broadcast, and covered in the ground by harrowing. If the land is inclined to clods, the roller is applied, in order to render the soil fine enough for receiving grass seeds, which are generally own with this kind of grain, and seldom fail in this course.

The

The old custom was to manure the soil for barley; but that practice is now exploded, unless when it is meant to lay the land to grass, and to continue it in pasture for a long time. Lime is then given liberally, and it makes the seed take well and the grasses grow with luxuriance.

The time of sowing barley is from the first of April to the middle of May.

Seed.—The seed in use is a kind which has been long naturalized to the climate. Little if any big is now sown, although in upland and late soils, it is more suitable and better adapted to the climate, as it ripens at least two weeks earlier than barley.

The quantity of seed per acre is from eight to fourteen pecks, according to the soils. After the seed is sown, the ground receives no farther culture, except the cleaning of it from thistles, or other tall weeds that may have sprung up.

Reaping and harvesting.—Like wheat, barley is cut with the sickle. It is often laid down in single sheaves and spread a little on the middle of the ridge, in which state it remains for a day or two, in order to its being dried more speedily. After this it is bound and set up in shocks of ten sheaves, with two caps or head sheaves for each shock. It is then left to stand till it is completely dried and ready to be stacked. This commonly requires fourteen days unless the weather is very favourable.

The time of barley harvest is from the middle of August to the first week, and sometimes even to the middle of October.

Produce.

Produce.—The produce is from five to nine bolls per acre.

Price.—The average price of barley for the last 12 years is L.1 4s. 7d. per boll *. See the table of the fiars of the county in the Appendix No. 5.

SECTION

* The prices of the highest class or best kind of grain are meant.

The following is a table of the average weight of *barley* which was raised on land of the best quality, in the parish and neighbourhood of Borrowstounness, in the year 1779, and also in 1791 and 1796, and the intervening years, besides the general average for a period of 21 years.

St. lb. oz.

A. D. 1779 18 14 0 Dutch weight per Linlithgow boll.

1791	16	14	6	ditto	ditto
1792	17	1	0	ditto	ditto
1793	17	5	5	ditto	ditto
1794	17	4	6	ditto	ditto
1795	17	4	0	ditto	ditto
1796	17	12	5	ditto	ditto
Average for 21 yrs. 17 10 0				ditto	ditto.

Average weight of *wheat* raised on the same land, A. D. 1795, 16 st. 2 lb. English weight per Linlithgow boll.

Average weight of *wheat* for a period of several years, 16 st. 8 lb. English weight per Linlithgow boll.

Average weight of *barley* used at Bonnytown distillery in this county:

St. lb.

A. D. 1805	17	12	Dutch weight per Linlithgow boll.		
1806	17	9	ditto	ditto	
1807	16	6	ditto	ditto	

G

The

SECTION VII.—OATS.

OATS are sown after one ploughing more commonly than any other grain. But where it is meant to reduce

The produce of *common-oats* in meal varies from $5\frac{1}{2}$ to 8 stone, Dutch weight per Linlithgow boll, and that of *potato-oats* from 7 to 9 stone per boll, according to situation and season.

By the preceding table it appears that the weight of barley raised on the best soil of the county, is seldom less than 17 or more than 18 stones Dutch per boll, though in one instance it was as low as 16 st. 14 lb. 6 oz. and in another as high as 18 st. 14 lb. This is a difference of near 2 stone in 18, or not much less than one-ninth upon the whole, which may serve to explain the reason why a deficiency of grain is sometimes so much felt; for though there should be as much bulk of grain produced in the country when its weight is deficient, (which, however, seldom if ever happens,) yet, in some years, one month's food in nine may be lost by the deficiency of weight alone. This is equal to more than five weeks in the year. Now, supposing that when the weight is deficient, the bulk also is deficient in the same proportion, (and this is what in general actually happens,) there must, in the case referred to, be a deficiency of food for about eleven weeks in the year, or upwards of one-fifth of the whole year. There can be no doubt that the demand for bread is nearly the same at all times; and this circumstance, together with such deficiencies both of the bulk and weight of the grain as sometimes happen, is a sufficient explanation of the occasional great variations of the prices in different years.

the land to a fine tilth, they will succeed well in all ploughings. The early kinds, in particular, require the land to be in high cultivation, otherwise they will not be productive. Oats frequently succeed on potatoes, clover, and old grass. In all these cases they generally thrive well, and prove a valuable crop to the farmer. The time of ploughing for oats varies according to the crops which they succeed. Old potatoes are broken up in December, clover land any time in January or February, and potatoe or turnip ground is ploughed a week or two before seed time. When the land is sown, it is ended to give the land more ploughings than the first is given either in autumn or during the winter, and the rest in the spring.

Oats are sown broadcast, and are covered in the same manner as barley.

and sort.—The kinds of seed most cultivated are, first, an early sort brought originally from Faunsclough, in the west end of Berwickshire; second, an early sort from Halkerton in Angus-shire, which are seven days later in ripening than the former. Both have been, and probably will continue to be, the most propagated, as they suit best with our variable climate and soil. In the upland parts of the county they have an early sort named early white seed, which answers their soils better than the others which have been mentioned. Besides these kinds, we have also the red-oats, the potatoe-oats, the small early oats, and some of the other Friesland varieties. Red oats deserve attention, as not being easily blown away by wind; and they afford a fair produce and

meal of an excellent quality. The straw of this sort, however, is in general shorter than that of the other kinds. Potatoe oats have of late been very prevalent here; and where the land is in a state of good cultivation, they produce abundant crops. Their straw is ranker in growth than that of the red oats, and rather of worse quality. They are easily shaken by winds; if too ripe they are very apt to fall out in handling; and if the weather is wet they soon grow in the shock. But, upon the whole, they appear to be as productive both of grain and of meal as any of the other foreign kinds which have been introduced here. Like all the early sorts, they require frequent changes of seed to prevent them from degenerating. The seed which is got from a good soil and climate is found to succeed best. The early Dutch oats, with the other Friesland varieties, degenerate sooner than any of the sorts which have been mentioned.

The quantity of seed sown on an acre is about a boll or near six Winchester bushels. Oat crops are hand-weeded, if thistles or other weeds make their appearance.

Reaping and harvesting.—Oats, as well as the other kinds of grain, are generally reaped with the sickle, and set up in shocks in the way before described. In several places a method is occasionally practised of setting up sheaves single in rows along every ridge. They are slightly bound near the top, but so as not to separate in handling, and are spread out at the bottom in order that they may stand steady. In this form they are not ill defended from a shower; and if the weather

is tolerably fair, they are ready for the stack or barn in a week or ten days from the time of cutting. Tight bound sheaves require near the double of that time to prepare them for being taken home; unless the season is remarkably fine.

Produce.—The produce varies from five to twelve bolls per acre.

Straw.—The straw is used either as food or litter to domestic animals, and to cattle kept for the purpose of converting it into manure.

Grain and Application.—The oats are either used as food to horses, or are made into oatmeal for domestic purposes. The surplus, except the quantity needed for seed, is sold in the market, and applied to the uses already mentioned.

Porridge.—Porridge, made of oatmeal and water boiled together, is almost constantly used for breakfast by farm servants, and by all the lower classes; and in the absence of potatoes, it is their common supper. When potatoes are ready for use, the porridge supper gives way to the potatoe one. Porridge is usually eat with milk.

Oat-cakes.—Thin cakes of oatmeal baked on a girdle * on the one side, and toasted before the fire on

G 3

the

* This is a thin circular plate of iron made sometimes convex and sometimes plain on the upper side.

the other, are likewise in general use as dinner bread to labourers of every description. But wheat bread is now fast gaining the preference among all ranks, and the use of it is now become very general.

The circumstances on which the good quality of oat cakes chiefly depend are the following; the oatmeal being good in quality, and ground rather smaller than if intended for porridge; the meal being baked with as much cold water only as is necessary to give consistence to the bread, the cakes being made very thin, and care being taken not to burn them in toasting either on the girdle or before the fire. When oat-cakes are baked in this manner, they are a very palatable kind of bread.

Sowins.—Sowins, or flummery, are sometimes used as a supper meal. The mode of preparing sowins is by infusing in a proportionate quantity of cold water, the shells of oats which are left in the sieve when sifting oatmeal. A portion of the oatmeal, less or more, always adheres to the shells. After the shells have been steeped from eight to fourteen days, according as the weather is hotter or colder, the infusion becomes somewhat sour; and during this process, a pulpy substance subsides to the bottom. The whole infusion is then strained through a sieve into a clean vessel, over the top of which a cover is laid. After standing for a while, the pulp again falls to the bottom, and the water above is poured off. A quantity of fresh water is next added, in order to prepare and sweeten the substance still more. The whole is then stirred about; and when the pulp falls to the bottom, the water is again poured off,

off; and the sediment which remains is ready for use. If the second water has been thought not to sweeten the pulp sufficiently, a third is sometimes given. It is usually prepared for a meal by being boiled for a short time on a slow fire. A little salt is thrown into it while boiling, and it must be stirred slowly round during all the time it is on the fire, to prevent it from adhering to the boiler, and thereby acquiring a disagreeable taste. When it is sufficiently thickened by boiling it is taken off the fire, and is ready for use. Sowins are eaten with sweet milk, and are pleasant to the taste. They are esteemed a very light kind of food, and are gently diuretic.

Price.—The average price of common oats for the last twelve years, is 19s. 4d. per boll. The medium price of potatoe-oats for the last two years is L.1. 4s. 4d.* See the Table of Fiars in the Appendix, No. 5.

SECTION VIII.—BEANS AND PEAS.

BEANS and peas mixed are sown after wheat or oats, sometimes broadcast and sometimes in drills. When

G†

sown

* The prices of the highest class or best kind of grain are meant.

sown broadcast they are covered in the ground by harrowing, only one ploughing at seed time being given. In this mixture the proportion of beans used for seed is regulated by the nature of the soil. If it is a strong clay or a deep loam, which indeed are the only kinds of soil on which beans should be sown, the beans out-measure the peas in the proportion of five to one. Between five and six firlots of this mixed seed are generally allowed to an acre. In the drill husbandry, the same quantity of seed or rather more is requisite; but the land commonly gets two ploughings, one in autumn, and another immediately before seed time. The distance between the rows is from two feet to thirty inches, according as the land needs less or more to be cleaned by horse and hand-hoeing. The drill barrow sometimes follows the plough while giving the last ploughing, in order to drop the seed in the bottom of every second or third furrow according to the width wanted. In this case, the land is not harrowed until the beans and peas begin to make their appearance just above ground. The harrow is then used with a view to reduce the soil, and to destroy annual and other weeds as much as possible. Another method is to plough the land across the ridges in autumn, always water-furrowing it, and to plough along the ridges in spring. After this last ploughing, the plough goes over the whole field again, making small drills about half the depth of the former furrows, and at the distance between the rows before mentioned. The drill-barrow follows the plough for the purpose of dropping the seeds, and the harrows succeed to cover them in the drills. After this the field is water-furrowed. It receives

ceives a second harrowing as in the other cases, about the time when the beans begin to appear above ground. Afterwards, when the weather is dry, the horse and hand-hoes are applied alternately until the land is properly cleaned.

The time of sowing beans and peas is in the months of February and March : But if the weather is suitable, the sooner the seed is sown the better is the chance of securing a full crop of grain.

When the land requires a little manure, a few cart loads of dung per acre are sometimes given, either in autumn or in the spring, as the weather and convenience of the farmer will permit.

Seed, and sort.—The sort of beans and peas used here is the same which is used over the Lothians and county of Fife. Being naturalized to the climate, it seems to answer better than any other which has been tried. There is an early variety of the gray peas occasionally sown in the upland grounds, which ripens three weeks before the common sort : But being a fickle crop, sometimes by far too rank in straw, and at other times the reverse, they are not much used.

Depth.—The depth at which beans and peas are laid in the drills is about three inches in the method last mentioned ; but in the former they are laid from four to six inches, or according to the depth of the furrow.

Distempers.—We have of late found beans less productive than usual, scarcely furnishing half a crop, and in some years not yielding double the quantity of the seed
sown.

sown. This has been owing to their being infested with a black vermin, and to a complete blighting or mildew, which stops their growth and hinders the pods from filling.

Cutting very green.—When beans and peas are cut very green, the straw is much more valuable for fodder, but for any other purpose this practice does not appear to be attended with advantage.

Harvesting.—After being cut with the sickle, beans and peas are laid on the ground in open handfuls or unbound sheaves, in which state they remain for several days, in order to expedite their preparation for the stack. To complete the preparation, they are afterwards bound and set up in shocks of six or eight sheaves. When ready they are stacked and covered in the manner before described.

Produce.—In none of our other crops of grain is there such variety of produce as in this. It is sometimes as low as three bolls, and as high as eighteen per acre.

Straw.—The straw of beans and peas is always given as food to horses. Of all the kinds of straw, that of beans and peas is by far the most valuable fodder to horses. The straw of common oats is next in value as fodder to all kinds of stock. The straw of potatoe-oats and of the Dutch kinds is inferior in value to that of common oats. Barley straw is better fodder than wheat straw unless for horses, but wheat straw is the best

best of any of the kinds for litter, and it is the only kind that can be used with advantage for thatch.

Grain.—The grain of beans and peas is likewise given as food to horses. What remains, after answering this purpose, except the quantity needed for seed, is sold to merchants or dealers; and it is bought from them to be used in the same manner, either in this or in the adjacent counties.

Price.—The medium price of beans and peas, for the last twelve years, is L.1. 5d. per boll. See the table of fiars in the Appendix, No. 5.

How used as food.—Peas meal made into bread was formerly very much used as an article of food, but is now almost entirely given up:

SECT. IX.—Nothing particular occurs on this section.

SECTION X.—TARES.

TARES are sown with a view to furnish food to horses after the first crop of clover is consumed by them, or is no longer fit for that purpose, and before the second is ready. They are occasionally allowed to stand for seed, but this practice is not frequent. I have tried the winter variety, but found it no earlier than clover

clover or rye-grass, and not near so bulky a crop. The crop, however, was very prolific.

SECT. XI. XII.—There is nothing worth mentioning in this county on these sections.

SECTION XIII.—TURNIPS.

Soil.—THE quantity of land occupied in tillage in this county, that is deemed fit for the turnip husbandry, is but limited, and is scarcely dry enough to suit with sheep-eating turnips on the ground in winter, unless it is situate in the vicinity of an old grass field, to which they may occasionally retire.

Tillage.—The land is always ploughed first in autumn, and again in the spring, when it receives as many ploughings and harrowings as are necessary to clean and pulverise it properly *. After the land is cleaned it is laid up in drills from twenty-eight to thirty inches wide.

* It is very disadvantageous to plough land intended for turnips when it is too wet, and therefore this is usually avoided.

wide. The dung is laid in the hollow parts of the drills, and immediately covered by the plough splitting the drill, that as little moisture as possible may evaporate. Immediately after this, the roller is applied; which is followed by the drill-barrow, that the seed may have the full benefit of the moisture in the soil before it becomes dry. The seed, of which two or three pounds are allowed to an acre, is generally put from one to two inches deep in the ground. The number of cart loads of dung given to an acre is from twenty to twenty-five. When the dung can be obtained it is sometimes laid on the ground in autumn, by which means it becomes incorporated with the soil in the course of ploughing and harrowing. This mode of preparation is found to answer very well.

The broadcast method is not in use here; and it is not to be regretted, as the land is much more effectually cleaned and at less expence by the drill husbandry; neither is it believed that, if sown broadcast, so weighty a crop would be produced on our soils.

Seed, and sort.—The best sort, and one which begins to prevail here, is the globe turnip. The other common varieties, which all thrive well, are likewise in use. There is another sort of a yellow colour which is said to stand the winter well, being at the same time nutritious and producing a fair crop. But we have not yet had this kind raised in such quantities, nor so frequently, as to form a true estimate of its real utility.

Fly, preventives.—We have found no preventive against the fly that is worthy of notice. In the year
1804,

SECTION XV.—CABBAGES.

CABBAGES are not cultivated to a great extent here. They are only raised occasionally in the corners of fields, where the soil is strong and deep. They require, in general, a larger portion of dung than can well be spared from the other crops, except in the vicinity of towns where it can easily be got in abundance. The cabbage is, upon the whole, a plant which affords a large produce, and feeds cattle well. Soils newly turned up or trenched, and without dung, sometimes yield productive and weighty crops. It is thought, however, that the land is less fertile after cabbages than after any other green crop in use here. The bad effect of this crop on thin soils is still more severely felt than on loams and good clays.

Cabbages are generally given to fatten cattle, or to feed milch cows before they begin to eat turnips.

If they are very richly dunged, they certainly yield, upon land suited to them, a weightier crop than turnips.

When the cabbage is carried away, the root ought always to be pulled up, because, if it is left to grow till the spring, it will much diminish the fertility of the soil, and probably nourish and increase hurtful insects in the ground. The grub, or worm, so destructive to this plant, may easily be kept under by looking the leaves in the butterfly season, and crushing the eggs in the nidus or nest. If this is neglected, the crop in general will not fail to be materially damaged.

SECTION

SECTION XVI.—RUTA-BAGA, OR SWEDES.

THIS root appears to be a valuable acquisition both of winter and spring food, as it stands all the severity of our winter, and vicissitudes of the weather, and may be used with advantage to a more advanced period of the season than either common turnips or cabbages.

Soil and tillage.—The same soil on which common turnips are raised suits Swedes : But one-third more of dung per acre is required to make them bring a full crop. At the sametime, they thrive rather better on loams and good easy clays, where they are more productive than on light soils. The same culture which common turnips receive, is requisite for Swedes, but, in order to secure a full crop, the seed should be sown about the middle of May.

Seed.—The yellow-sort is most esteemed.

Transplanting.—Swedes succeed very well by transplantation, if the plants are strong and put into the ground before the severe summer drought sets in.

Application.—They are usually given to cattle. They do not impart to milk so rancid a taste as common turnips ; and for that reason it affords better butter.

Comparison with turnips.—On account of their solidity, they do not soon become flaccid, and therefore

H

suit

suit better than common turnips for being stored. For two years past I have laid them up during the month of April for the use of the domestic animals, and have experienced them to answer well. If they are found too hard for the teeth of cattle, they may easily be cut in slices, which is a very safe way of feeding them.

When a full crop of them is got, they may be reckoned one third more valuable than turnips as spring food to cattle.

SECT. XVII. XVIII.—Nothing particular occurs in this county on these sections.

SECTION XIX.—OPEN KALE.

OPEN kale are rarely planted to any extent in the fields, although they can easily be raised without dung or with very little. They keep green in the ground all winter, and are seldom broken down entirely by frost. They prevail in every garden, even among the cottagers, and are used in winter as a pot herb, for which they are well adapted. They would be found very useful in feeding young stock of every kind, as they all eat them greedily.

SECT.

SECTION XX.—CARROTS.

CARROTS are not sown on a large scale. Indeed, the pieces of ground suitable to them are not often lying together. Few kinds of crops, however, afford more nourishment to horses and other animals than carrots, when a full crop of them can be obtained. I have experienced their good effect both on horses and cows. Few plants make milch cows give so rich milk and butter as the carrot. They were always given to the horses and cattle clean washed and in a raw state*.

SECTION XXI.—PARSNIPS.

HORSES and cattle are not so fond of parsnips as of carrots. Parsnips grow more freely than carrots, but the difficulty of taking them out of the ground is an insuperable objection to their cultivation. They often grow from eighteen to twenty-four inches deep. Parsnips, even when steamed, do not appear to be so nutritious as to merit extensive culture.

H 2

SECT.

* On the estate of Colonel Gillon of Wallhouse, in the west end of the county, I met with crops of carrots, turnips, cabbages, potatoes, tares, and buck-wheat, all thriving remarkably well, the land being in a state of high cultivation.

SECT. XXII.—Nothing particular occurs on this section.

SECTION XXIII.—POTATOES.

POTATOES are very deservedly raised in a greater or less quantity on every farm in this county. It may be questioned if more human food can be produced on a given space of ground than this most valuable root, properly cultivated, will yield.

Soil.—The soil best adapted to potatoes is good loam or a light gravel inclined a little to sand. They thrive likewise on well cultivated clays, if not too stiff and retentive of moisture. Old grass lands newly broken up that are deemed too rich for white crops, afford a large produce of potatoes, even without manure. Land, in the second year after old grass, likewise gives a very great increase, and potatoes of the best quality. In these courses the curl, if the seed has been free from it in the preceding year, is seldom seen. Except when the land is sufficiently rich, manure is always applied to the soil on which potatoes are planted. Twenty or twenty-five cart loads of dung are given to

an acre, either in autumn before ploughing, or in the spring before planting.

Mode.—Drills or rows from two feet to thirty inches distant, with the sets ten or twelve inches from each other, are the prevalent mode of cultivation, although in some situations potatoes are occasionally dibbled. In the upland parts of the county a few are raised in lazy beds.

Tillage.—The land is ploughed first in autumn, and again in the spring as soon as it is dry. If it has not been ploughed across the ridges the first time, this is done at the second ploughing; and the land is always water-furrowed. In April it receives a third ploughing, which ought to be given in dry weather, and to be as deep as the soil admits. It is besides harrowed, and cleaned as much as is possible at that season. Some lay it up in drills, as in the turnip husbandry, putting the dung in the hollow and dropping the sets on the top of the dung at the distances wanted. The drill is then split with the plough, and both seed and dung are covered at the same time. After this, nothing more is done till the plants begin to appear above ground, and then the harrows are applied to smooth the surface, and to destroy the annual weeds that may have sprung up. The land is next cleaned by alternate horse and hand hoeing. Another mode of preparation is spreading the dung over the ridge, covering it by ploughing in the common method, and dropping the sets of potatoes in every third furrow.

row. In other respects, the management of the ground and crop is the same as in the drill mode. It is not found to be of any moment to the success of the crop, whether the one or the other of these modes is pursued, provided they are equally well executed.

Sets.—Sets are commonly cut from the potatoe in pieces with an eye left in each. It is judged advisable to cut off the small end of the potatoe, and not to plant it, as it produces a number of tops, but is not prolific of roots. The sets ought not to be cut into very small pieces, because plants grow more rapidly, and are much more productive from large ones. Care should be taken not to plant the sets too deep, otherwise the increase will be very much lessened. If the covering defends them from frost, and from the depredation of crows, it is fully sufficient.

Sort.—The sorts are so numerous, and their names so arbitrary, that it is almost impossible to describe them intelligibly. The kind which has been prevalent here for a number of years, is the purple streaked and speckled potatoe, which is of a mealy consistence and palatable, and at the sametime productive. This sort do not run far from the mother plant : but as they incline to grow near the surface, they require to be well earthed up after the last hoeing. Besides this sort, I have propagated two red skinned varieties, one of which has not yet shown any disposition to curl, although it has been raised during a course of five years. It is a heavy, dry, and insipid potatoe ; and is given as food to the horses. The other red variety is dry and pleasant to the taste, but extremely prone to curl. Perhaps
this

this might be prevented by late planting and early taking up, as recommended by the Board of Agriculture from the experiment of Mr Crozier at Alnwick. It has been usual to cultivate another kind, which has acquired the name of the white bloom. This is a white potatoe, watery, very prolific, and never curls. It is the practice to give it occasionally to horses, hogs, and cows. The Surinam yam is also raised for cattle. It never curls.

Curl.—It is very probable that the disease called curl may in a great measure be prevented by late planting and early taking up. The watery kinds, or those which do not ripen fully, are never, or at least very rarely, attacked by this distemper. In the high or upland parts of the country, too, potatoes are usually free from it. But in keeping potatoes for seed, which are early taken up, it is necessary to guard against storing them in too large a heap; otherwise they will certainly be heated and spoilt for seed, and probably as apt to become distempered as ever.

It is probable that the curl proceeds from more causes than one; from too many being stored in a heap; from being partially frosted; from wet and cold weather after planting, which weakens the vigour of the set or plant; and from a species of grub preying upon the mother plant. This insect I found invariably corroding the sets of the curled plants in my fields, during the present season, A. D. 1808. I have frequently taken up the distempered plants; and, upon narrow inspection, found a small white insect preying upon the sets. Not being able with the naked eye properly to distinguish the insects, I viewed them through

a microscope, and found them in every respect corresponding to the large grub-worm in a state of infancy. But whether the distemper is caused by the grub, or whether this insect preys upon the plant because it is distempered, I cannot determine.

One method of preventing the curl is picking out the seed from among the whole stock, and always choosing the largest potatoe. In this way a greater produce is obtained, and changing the seed is less necessary. Owing to this mode of management, my stock has been but very partially affected with the curl, except in one variety of the red sort before named.

The change of seed, however, from higher parts of the country, or from districts where the curl has not made its appearance, is the most immediate and certain preventative ever yet found out, and sufficiently established by experience: But in order to render the preventive permanently effectual, the seed must be changed every year.

In the upland parts of the county, the curl does sometimes make its appearance, but the distemper there is by no means so virulent or so general as in the lowland parts. When they take their seed from the low country, as they occasionally do, the curl appears a little in the first year; but in the second year, there is no curl when they use their own seed.

Time of planting.—The time of planting is from the middle of April to the end of May, according as the season suits.

Top.S.

Tops.—The tops are used mostly as a manure. By being thrown into a heap they soon become heated, and pass into a state of putrefaction, which fits them to be laid as a manure on the land.

Taking up.—When the weather and other circumstances admit, potatoes are commonly taken up in the first weeks of October. If they remain in the ground after that time, they are in great danger of being destroyed by wet weather or frost. Some take them up with the plough; but the prevalent practice is by digging with a fork of three prongs. The mode, although it may occasion a little more labour, is the best. The land is less hurt by the fork than by the plough, if rainy weather sets in before it is properly prepared for receiving the seed of the following crop.

Storing.—Potatoes are sometimes laid up in large heaps, and covered with alternate layers of straw or brush and earth, in order to defend them from winds and frost. But the safest method, where it is convenient, is to store them on an earthen floor, under the eaves of a house, and to spread a sufficiency of loose straw over them, to prevent damage by frost.

Produce.—The common produce per acre may be nearly from forty to sixty bolls, of 24 stones Dutch per boll.

Price.—The price varies from 6d. to 1s. per peck, from 8s. to 16s. per boll, according to the demand.

Application.

turnips. The same observation does not hold in respect to red clover, as it is found to leave the soil in a state of greater fertility than any of the other green crops. It cannot be denied, however, when land is cropped in the following manner, first, wheat; second, potatoes; third, oats; or, first, wheat; second, oats; that the crop of oats which succeeds the potatoes, is much more productive than that which succeeds the wheat: And this may seem to be at variance with the proposition, "that all crops not eaten, or left on the ground, must more or less exhaust it." In answer to this objection, it may be observed, that the effect of different crops on the fertility of the soil, depends on more causes than the mere kind of the crop; and especially on the working, manuring, and cleaning of the land.

As potatoes are commonly removed from the ground at an earlier period of the season than turnips, a greater space of time is allowed to choose a proper season to prepare it for the crop which succeeds potatoes, than for that which succeeds turnips. It frequently happens, too, that turnips are taken off the land in carts, when it is in a wet state, during the winter, and this renders the soil less fit for producing the crop immediately succeeding*. These circumstances, as well as the fertility of the land, materially affect the success of crops; and for this reason, it is the more difficult to decide the question, "Whether, at the long run, potatoes or turnips exhaust the fertility of the soil least?"

* The reason of this seems to be, that the horses feet and cart wheels sink too deep into the ground, and thereby cause a greater proportion of water to be retained in the soil than suits with its vegetative power.

land. When one white crop is taken immediately after another, the ground usually receives no working but one ploughing, or at most two, and a harrowing to cover the seed, and, in general, no manure is given. But the preparation of land for potatoes is, for the most part, of the nature of a partial summer fallow. These observations may serve to show the reason why a better white crop is obtained after potatoes than when it is taken before them. In discussing the question, "whether potatoes exhaust or improve the soil," the proper subject of inquiry is, "whether, when all other things are equal, viz. working, cleaning, and manuring, will the land produce a more luxuriant crop after potatoes, than after bearing no crop at all; or, in other words, "whether does a potatoe or summer fallow preparation yield the most luxuriant subsequent crop?" for in this case, the luxuriance of the crop is the only rule by which the fertility of the soil can be estimated. It is certain that a more luxuriant crop usually succeeds summer fallow than potatoes, both because the land is better wrought and cleaned by summer fallowing than it can be by a preparation for potatoes; and, also, because in summer fallow there is no exhaustion of the soil, but, on the contrary, a positive increase of its fertility, at least in this part of the island.

It may be remarked, that it sometimes happens that soils are too rich for producing a good white crop in the first instance. In this case potatoes succeed well, and are in a high degree useful for rectifying the soil, and preparing it to bear a good crop of grain; and this seems evidently to imply that potatoes exhaust the fertility of the soil. It is a fact deserving observation
likewise,

likewise, that potatoes will sometimes thrive and prove a productive crop on soils without dung, where turnips will not succeed.

What succeeds.—Wheat, oats, or barley, succeed potatoes, according to the future views of the farmer: and artificial grasses generally succeed the white crop.

SECTION XXIV.—RED, OR BROAD CLOVER.

THE seed of this valuable plant is occasionally sown with any white crop, when the land is deemed in a proper state for receiving it. When sown with wheat, is generally put into the ground as early in the spring as the land is dry enough to admit the application of the harrows or roller. Sometimes both harrows and roller are applied, if the land is soft and apt to heave out the roots of the wheat plants. At other times, the light harrows only are used. If the grass-seeds are sown with barley or oats, they are put in immediately after the seeds of these crops are sown. The land is made fine and freed from large stones on the surface.

The quantity of seed per acre differs according to the nature of the soils, and the purposes for which the future crop is intended. If only one crop of hay is to be taken, the usual quantity is from ten to sixteen pounds

pounds of red clover, and one bushel of rye-grass, tho' some use rather less than a bushel. If the ground is to be pastured, besides the kinds and quantities of seed before mentioned, four pounds of white clover, four of yellow clover, and four of rib-grass, or narrow leaved plantain, are usually added, and altogether these seldom fail to make close and rich pasture.

Use.—The crop is used either for hay, for pasture to cattle, or for summer food to horses.

Wheat after Clover.—Sowing wheat after clover is not a common practise here, although it is sometimes done. There can be little doubt, however, that, in a course of years, it is more profitable to take oats instead of wheat. Oats are far less liable to accidents and stemper than wheat, and, in this course, never fail to produce an abundant crop.

Is the land tired of clover.—It is certain that the land often has the appearance of being tired of clover: but whether this proceeds wholly from frequent repetition, or from some peculiarity in the season, or from bad husbandry, or from an improper course of crops, it is sometimes difficult to determine, as all these causes concur, more or less, to affect the crop.

For this evil no cure is found so effectual as pasturing the land for a few years. It is afterwards broken up, and a crop of oats is taken, which is succeeded either by a complete summer fallow, or by green crops. After this, the alternate course of white and green crops may again be pursued.

White

White and yellow clovers.—White and yellow clovers, as before taken notice of, are sown together with red clover only for pasture. The white clover is natural to the soil, and never perishes, if the land is allowed to remain in pasture. On this account, as well as for its being found nutritious food for horses, cattle, and sheep, it is a valuable plant. It bears being closely bit as well if not better than most of the other pasture plants with which we are acquainted.

Yellow clover is a good help in most soils for increasing the herbage. It is not shy; and all the animals indiscriminately eat it. It lasts well in our soils, keeping up its kind by shedding abundance of seeds.

Seeded.—Seed is not procured from any of the clovers here, the climate being too late and wet for bringing it in general to maturity.

SECT. XXV.—Nothing particular occurs on this section.

SECTION XXVI.—RYE-GRASS.

Rye-grass is universally sown in the county: And unless when it is designed for seed, it is always sown together

together with clover seed, either for hay or pasture. If it is intended to stand for seed, an acre will require to be sown with two bushels: If it is sown with other grass seeds for the purpose of hay or pasture, an acre will require from a half to one bushel of seed.

Application.—Rye-grass is much esteemed for hay to hunting horses, and likewise to horses for work and for the road. It is found to produce earlier pasture than any other kind of grass which we yet know; and if it is not allowed to seed in the spring, it continues to afford good pasture together with the other grasses during the whole season.

The produce, in seed, is usually from eight to eleven bushels per acre.

Annual and perennial sorts.—There are two varieties of rye-grass, the annual and perennial. The first, if possible, ought to be wholly extirpated, as it entirely disappoints the farmer, if he depends upon it any longer than one year for pasture. The annual rye-grass seed is often sold for the perennial, to the great loss of the occupiers of pasture lands. Although the annual generally appears more rank in growth than the perennial, yet it is not found weightier, if even so weighty. It has a more hollow stem, and is not so closely set in the ear; and consequently is apt to deceive a superficial observer. The perennial variety, though crowded in our old pastures with the other natural plants, never fails to produce its proportion of the herbage. It has likewise the good property of affording

fording tolerable crops of hay upon thin weak soils, where red clover will not succeed. At the same time, when sown thick and allowed to seed, it is reckoned nearly as exhausting a crop as oats; and consequently, if a crop of oats follows it, the land will require to be fallowed and manured. If, however, it is not allowed to seed, it is much less hurtful to the soil than is commonly imagined.

Hay-making.—When the weather is good, and the grass is cut dry, it is allowed to remain in the swath a day or two. After this, it is put into small cocks, which are left to stand just as long as is found requisite for drying it sufficiently in order to its being formed into ricks in the field. The ricks generally contain from forty to a hundred stones of hay. In this state the hay usually continues till it is judged fit for keeping, when it is carted home, and built in stacks, which are covered with thatch to secure them from rain.

SECT. XXVII to XXXII.—Nothing particular occurs in these sections.

SECT.

SECTION XXXIII.—FLAX.

FLAX grows well in many parts of the county. It was cultivated more extensively several years ago than it is at present; and the quantity produced now, is probably far short of what is needed for the use of the inhabitants. Although the land is not in general very suitable to the growth of flax, yet there is little doubt that as much might be produced, on pieces of ground properly selected, as would be sufficient for the use of the county. We have never yet been very fortunate in finding manufacturers fit to dress it properly and faithfully for the owner or dealer; and this circumstance tends to discourage the farmer from its cultivation. Besides this, the demand for women's labour in other branches of business than spinning, such as tambouring* and farm work, seems to have had an effect in diminishing the quantity of seed sown. Perhaps, too, the custom lately introduced among the common people, of purchasing woollen and cotton cloths instead of making cloth for their own use, as was formerly the practice, may have induced them to purchase linen al-

I 2

so;

* Tambouring interferes much with spinning: When trade was brisk, a young woman could earn by it 7s. a week and even more. The prices are now fallen; but still spinning does not increase. There are at least six times as many women employed in tambouring as in spinning.

so ; for the transition from one custom to another of a like kind is natural and easy. The cold springs likewise, which we have of late experienced, were unfavourable to the growth of flax, and may have discouraged its cultivation. Less seed seems to have been sown in the last spring (1868) than ordinary, owing to the high price which formerly used to be from five to six shillings, but rose, at that time, to nine shillings and sixpence, and even thirteen shillings per peck.

CHAP.

CHAPTER VIII.

GRASS LAND.

SECTION 1.—MEADOWS.

MEADOWS, which are not numerous here, are for the most part cut for hay, as are likewise some of the old rich pasture fields or inclosures about gentlemen's seats. Grass of this description seldom arrives at its proper growth for hay till after the middle of July ; at which season the weather often proves very moist and unfavourable for making hay properly. This kind of hay always requires more labour to make it well than clover or rye-grass. Being composed of a great variety of small and leafy green plants, it is more apt to be heated if it is not properly dried and freed from the natural juices.

Produce.—The produce varies from a hundred and fifty to two hundred stones per acre.

I 3

Expence,

Expencc mowing, making, and stacking.—The expence of mowing is about 5s. per acre, and that of making about 4s. The expence of carting and stacking varies according to the distance of the carriage, and the quantity which is put into a stack, as the building of large and high stack must always rise in expence in proportion to its height.

Manuring.—Meadows, properly so called, receive no manure but the falls of rain which occasionally flow over them. When dung can be procured, it is sometimes laid on the surface of old pastures in autumn; or, in place of it, lime; if it has not been applied within a short time prior to this manuring. An excellent effect is produced by either of these applications.

SECTION II.—PASTURES.

A very large portion of the rich lands in the county is occupied in pasture.

Stock.—Cattle is the prevalent kind of stock. At the sametime, where the inclosures are found to answer, a considerable part of the land is pastured also with sheep.

Rent.

t.—Rent varies, according to soil and situation, L.1 to L.4. 15s. per acre.

duce.—It is reckoned good land if an acre fattens a cow of thirty-six stone-weight Dutch, when required by the butcher.

Dairy grounds.—There are few, if any, farmers in the county who make the dairy their sole or even chief occupation. It is generally carried on for domestic uses. The milk which is not needed in the family is either sold sweet, or made into cheese; or, if more common, the whole of it is churned in order to obtain as much butter from it as possible. Cream and butter-milk, which are not needed for domestic use, are sold to dealers, who carry both to the market in the neighbourhood, and not unfrequently to Edinburgh, where of late the butter has commonly sold at the rate of 1s. 6d. per pound of twenty-two pounds, and the butter-milk at a penny per Scotch

Produce per acre.—In the low as well as the upland districts, cows are always grazed on the best pastures; while giving milk, they ought to be liberally fed, otherwise they will afford a scanty produce.

In the low country it will require two acres to maintain a cow of thirty stone Dutch, during the summer, allowed to range the ground; and as much in the upland district, to maintain a cow of about twenty-five stone Dutch, as the land there is not so fertile as in the low tracts.

The produce of one of the best milch cows here, if well fed during the summer and winter, may amount in value to about L.15, where the situation is near towns. The produce of one of the more ordinary sort may amount to L.8. and upwards. Counting two acres of the best pasture at L.4. 10s. per acre for the maintenance of a cow in summer; winter meat at L.4 or L.5, and the expence of management and of dairying, the keeping of cows for the dairy will not be found a profitable concern, even although L.2 are allowed for the value of the dung.

Rent.—The rent of dairy ground per acre may be rated at L.4. 10s. in the low and best parts of the county, and at L.2. 5s. in the uplands.

Sheep Pastures.—There are no sheep walks in the county, unless the inclosures about noblemen's and gentlemen's seats may be so termed, in which sheep are often kept, either for their own use or for the butcher. These inclosures are not unfrequently let a rack rent to graziers, for one or more years, as may happen to be agreed on.

Produce per acre.—It is very good land which feeds four ewes and lambs of the Scots or black faced kind: Three will be found nearer the average.

Rent.—It has not for several years been so profitable to the grazier to pasture with sheep as with cattle; and, therefore, grazing with sheep has been rather on the decline. It is found, however, that pasturing with
sheep

sheep enriches the soil more than pasturing with cattle. In consequence of these circumstances, grass lands have been let at the rate of 10s. per acre less for sheep than for cattle.

Laying land to grass.—The best preparation for laying land to grass is to summer fallow it completely, by ploughing and harrowing as often as is found requisite for pulverising the soil, and for freeing it from weeds. Prior to this, it ought, if necessary, to be under-drained and cleared from stones. Dung, well prepared, to the amount of at least 25 double cart loads, with 70 bolls of good lime per acre, will be found necessary for rendering the soil permanently fertile, and the pasture nutritious. If it is intended to lay a gentleman's park or pleasure grounds speedily to grass, the proper seeds may be sown as soon as the process of fallowing is finished, which, if possible, ought not to be later than the end of June or first week of July. If a bushel of barley or oats is mixed with the grass seeds which are requisite for an acre, and sown together with them, the seeds will thrive better, as the blades of the barley or oats will shelter the young plants of grass from the scorching rays of the sun. The barley or oats, when a little grown up, may be mown, and the produce carted off, and either used green or made into hay. Cattle ought not to be allowed to range, for the first season, on grounds which are prepared for pasture in this manner, but a moderate number of sheep will do no harm. If a crop of grain is intended to succeed the fallow, wheat, oats, or barley, may be taken, as the soil is found to suit. None of these crops, however, ought to be sown thick, otherwise

otherwise they would probably prevent the grasses from succeeding. Two bushels of wheat per acre, and three of oats or of barley are fully sufficient, but the allowance of grass seeds should not be sparing. Eight pounds of red or broad clover, six of white clover, four of yellow clover, and four of rib-grass or narrow leaved plantain may be given to an acre; and if any other natural grasses are wanted, a few pounds of them may also be added. Lands which are prepared in this manner will hardly fail to produce permanent pasture of the best kind.

Time of sowing—Grass seeds, when put in with wheat, should be sown as early in the spring as possible, or as soon as the land will carry horses to harrow or roll it for the purpose of covering them. The harrow or roller ought never to be applied when the land is wet. If grass seeds are put in with the spring crops of grain, and sown at the same time with the grain, there is little danger of their failing.

Cutting the first year's crop for hay, is a practice which cannot be recommended. It considerably weakens the subsequent crops, and hurts the fine rich carpet which succeeds a proper grazing.

As land which is thus richly laid to grass affords the greatest produce, the rent, if the soil has been originally good, will vary from L.4 to L.6 per acre, according to situation and circumstances*. The fertility of

* This is considerably higher than the average rent of pasture lands, even in the best part of the county, because few of the lands are so richly laid down.

of the soil will likewise increase every year by proper grazing.

Breaking up grass land.—Breaking up grass land has been formerly taken notice of in Chap. 3. Sect. 6th, note.

CHAP.

CHAPTER IX.

GARDENS AND ORCHARDS.

THERE are no gardens nor orchards of any considerable value in the county but such as belong to the seats of the nobility and gentry. This county is by no means remarkable for fruit. It is much exposed to the easterly winds which usually blow in the spring season, and which, together with the frost, in a great measure destroy the blossom of the fruit trees. The cold changeable weather prevalent in the beginning of summer likewise stunts the growth of the fruit; and such numbers of insects commonly infest it at that season, that there is frequently but a partial crop. When the seasons are favourable, however, the crops usually prove plentiful.

Cottagers have, all small patches of ground adjacent to their houses, in which cabbages, potatoes, and other pot herbs are produced for the use of their families. This is no doubt a great advantage to them, and contributes to attach them to the spot. They in general cultivate their gardens well. The rent of the house and garden may be from fifteen shillings to L.2 according to situation and other circumstances.

CHAP.

CHAPTER X.



WOODS AND PLANTATIONS.

the former and present proprietors of estates
paid great attention to planting. A considerable
number of acres is found under young and old planta-
tions most on every estate, amounting in the whole
probably to no less than four thousand acres,
and a very valuable improvement of planting high
lands is still going on.

Kinds planted are chiefly oak, ash, elm, birch,
beech, alder,* Scotch fir, larch, silver fir, spruce,
and different varieties of sallow or willows. Besides
mentioned, some of the proprietors have in their
parks a collection of all the other trees and shrubs
greens which are natives of Scotland.

The

Colonel Gillon of Walhouse has tried planting alder
and found it thrive better than the willow.

The use and value of the oak, ash, elm, and birch, are universally known. Oak sells from three to five shillings per cubic foot, and ash and elm from two to three shillings. Birch is seldom sold by the foot, being purchased while young by the dozen, from five to twelve shillings per dozen. The plane is used for blocks and pumps to ships ; and also for different purposes at printfields. It will bring from two to three shillings and sixpence per cubic foot, and sometimes more according to its size. Beech sells from eighteen-pence to two shillings and sixpence per cubic foot ; and if large enough for keels to ships, it will bring four shillings. Alder, if allowed to grow to a tree, is sometimes pretty large, but is not much used. Its colour is highly streaked or variegated. Scotch fir, planted in large clumps, belts, or plantations, is a very useful kind of wood, if allowed to arrive at maturity, for which it requires from fifty to sixty years and upwards. The greatest part of the timber used in the roofs of farm offices in the county consists of Scotch fir, where it can be got. When sawn, it is an excellent lining for carts, and, when used for this purpose, bears more strain than foreign fir. It produces timber of the best quality, when it grows on rocky or hard soils. It commonly sells from a shilling to eighteen-pence per cubic foot. The larix bids fair to be the most useful of all the fir tribe. It grows rapidly, and affords a strong and durable wood. When large, it brings from eighteen-pence to three shillings per cubic foot. The silver-fir thrives well, and is a pretty tree. The spruce is scarcely worthy of notice. Few of them come to perfection, and, when they do, being knotty and coarse, are dear in the working.

working. The willow or large saugh tree is a fast grower. It is much used for the covering of water wheels to mills, and sells from a shilling to two shillings per cubic foot.

To prepare ground properly for making a plantation thrive, it ought to be made free from excess both of surface and under water by draining; for in order to ensure the successful growth of wood, the land must be laid dry in the same manner as when intended for crops of grain or grass. Were the ground likewise previously summer-fallowed, the trees when young would gain almost one year in three, and acquire, besides, a more healthy constitution than if planted on uncultivated lands with a tenacious sward. When the land is in this last state, as indeed is commonly the case, the growth of the trees is retarded for years, and the plants are often so much stunted when young, as not to arrive at a healthy state, even when grown up. Planting potatoes for one or two years among the young trees greatly promotes their growth.

Most of the proprietors attend to the training up of their woods in a proper manner. This is a point of much importance to the success of the plantations. Trees ought never to be left any closer than nearly to touch one another in the branches. They should be pruned cautiously, and taken out where necessary to give full room to those which are intended to stand for old trees. This ought to be done with judgment, as all the large standing trees for ornament or even utility require much room when of age and size, not less than from 20 to 30 or 40, and in some cases 50 feet distant from one another, and more if the trees are very large.

Oak

Oak is supposed to stand two hundred years before it arrives at its full growth. On dry soils, beech trees are known to be still in vigour at the age of more than 100 years. Ash and elm will thrive, perhaps when still older, on soils which suit them. But all these woods grow worse in quality, if they are allowed to remain in the ground after the branches begin to indicate decay*.

Profit.—On good soils, or those adapted to tillage, there is no doubt that planting trees of any kind has hitherto been unprofitable; but on waste lands, unsuitable to cultivation, it is equally certain that planting is of all other improvements the most valuable.

CHAP.

* On the strong soils about Polkemmet and the Cults, the beech answers best. About Polkemmet House, a great variety of trees may be seen, as the larch, the oak, the elm, the plane, the ash, the Scotch fir, &c. &c. all thriving uncommonly well. On the recommendation of an experienced nurseryman, Lord Polkemmet has tried grafting the English on the Scotch elm, which has been found to answer. Sometimes the graft happened to decay, and in this case the Scotch elm sprang up by itself. At other times both succeeded; but the Scotch elm surpassed the English. On the same principle the service was engrafted on the mountain ash; and in some instances the stock produced the mountain ash and the graft the service, both thriving at the same time.

CHAPTER XI.

WASTES.



SECT. I.—MOORS—EXTENT.

THERE may be upwards of a thousand acres of moss, or moor, in the county, in its present state, of little or no value, and probably not susceptible of being improved with advantage.



SECT. II.—MOUNTAINS—EXTENT.

IN West-Lothian there are no eminences which deserve the name of mountains. The greatest, which are

K

sometimes

sometimes called hills, are more properly high and rocky grounds. Those in the lower district are,—Craigie, Dundas, Binns, Priestinch, or Craigton hills; none of which exceed four hundred feet above the level of the sea. In the high district are,—Binnycraig, about six hundred and eighty-one feet above the level of the sea, and remarkable for being perpendicular on its west side, and for its conical top resting on rock; Cockleroy, in the immediate neighbourhood of Linlithgow, on the south-west, rising nine hundred and thirteen feet above the sea; and the high land to the east of Bathgate, called Cairnpapple, rising about a thousand feet.

The greatest part of these lands, where they are not covered with woods and plantations, affords pasture to sheep and cattle; and most of them are enclosed, partly with stone fences, and partly with ditch and hedge.

The whole extent of the high and rocky land in the county may be about ten thousand acres.

SECT. III.—BOGS.

A trial, to a considerable extent, upon the plan recommended in the publication of Mr Smith of Swinridge-moor,

ridge-moor, has been made, to drain and improve a quantity of peat-moss in the neighbourhood of Bathgate, the property of Mr Marjoribanks of Marjoribanks; but the result of the experiment not having answered his expectation, has occasioned him to desist from prosecuting it any farther at present.

CHAPTER XII.

IMPROVEMENTS.

SECT. I.—DRAINING.

ELKINGTON'S method of boring or tapping the springs that lie near or below the place where the water issues may certainly in many situations be used with advantage for draining the land. But in such various and still more various subsoils as abound in this country it is found that the common sort of drains is full effectual or even more so. In this kind, the width cut with the spade to the depth wanted, which usually is from two and a half to three and a half feet; breadth at top being two feet, and at bottom from six to ten inches. If the spring or course of the water is not found at these depths, the drain ought to be made deeper in order to find it; or, in this case, Elkington's

may be advantageously used in the bottom of the drain. Plenty of stones, and of what is called blae, (which is a kind of soft slate) hard copse or brushwood, or other suitable substances, can generally be procured for filling the drains. When stones are used, they must not be larger than a man's hand. If slates or blaes are used, they must not be too thick. They must be set perpendicularly on their edges; though, if the stones or blaes are very small, they may be tumbled in at random. If the materials are of copse or brushwood, they should be laid somewhat aslant, beginning at the head of the drain. The drains ought to be covered with a layer of straw, furze, or small brushwood, to prevent the earth from obstructing the free passage of water. They should never be filled so high as to raise any part of the work within the drain to be damaged by the plough. Care must likewise be taken that the outlets of drains be kept clear. In order to this, the proper fall or declivity of the land must be attended to; and a main drain must be formed, into which all the other occasional or lateral ones must run. In this way the ground may be freed from all water, whether issuing from springs, or retained in the soil by not passing downwards through the subsoil; for there is often a subsoil impervious to water; in which case, vegetation is much hurt by the superabundance of moisture remaining in the soil.

What has been said of draining applies to all the varieties of soils, and even to clays: But the drains must be more numerous in the last mentioned soils, as they are more retentive of surface water, and not unfrequently rest on a crusty and impervious subsoil. None

of the different kinds of soil, however, with which we are acquainted, will better reward an extensive draining than clays.

Where the kinds of drains already mentioned are not sufficient to contain the current of water, boxed or covered drains will sometimes answer the purpose. These are made by laying a stone or brick, or other flat substance at the bottom, and setting two upright on their edges, with one of a requisite size as a cover to the top. Above this stone the drain is filled up in the usual manner.

On level lands, or where the declivity is small, open drains are indispensable for conveying away the surface water. The sides of them ought to be sloped from top to bottom, in order to make the passage easy; and also to prevent the earth from falling in, and stopping the free course of the water.

There are other drains which might be mentioned; such as those which are very narrow at bottom, and have what is called a scarcement* on each side, with inverted sods laid over the drain and resting on the scarcements for supporting the earth above. But also such

* The scarcement is formed by the drain being made wider above the upper surface of the scarcement than below it. It is generally about six inches in height from the bottom of the drain; and were the sides of the drain made perpendicular, the upper surfaces of the scarcements would both be at right angles to the sides of the drain, and in the same plane with one another.

uch superficial kinds ought not to be used, unless where the more substantial sort cannot be made,

Expence.—The expence of forming drains is various: If the spade only is used, it may be from 4d to d. per rood of six yards; but if they cannot be formed without the pick or mattock, the expense is considerably increased. The filling up will cost fully as much as the forming, unless the materials are very near and plentiful.

Effect or Benefit.—The beneficial effect of proper draining is incalculable. It lies at the foundation of all other useful and permanent improvements in agriculture. Indeed, without it no effectual improvement can be carried on upon wet soils. The following specific advantages seem to be procured by draining: The land is more easily laboured, cleaned, kept clean: manure acts with much better effect; if it is applied on undrained wet land it is in a great measure lost: less seed is requisite: both seed and harvest are earlier: The quantity both of corn and grass is increased, and their quality improved; consequently more stock can be maintained; and, eventually, the population of the country may be augmented. Draining is supposed, likewise, to promote the healthiness of the district where it is practised, by diminishing the dampness both of the soil and atmosphere. It is certain that, in well drained and cultivated tracts of the country, the ague, which was formerly prevalent, is now scarcely known to exist.

In this county draining has not been carried on to the extent that it ought, and which is necessary for procuring these advantages so fully as might be desired. Although a great deal has been done in the way of draining, and is still doing, yet much more is necessary in order to render the fertility of the soil as effective as it may be made. Unless the proprietors lend their assistance to draining, or grant the tenants a deduction from their rents of the full expence of it, and, at the same time bind them, in their leases, to execute it properly, the country will perhaps never arrive at that state of perfect husbandry of which it is susceptible.

SECT. II.—PARING AND BURNING.

Paring and burning are but rarely, if ever, practised here. Indeed it is not necessary, as there are no lands but such as can be sufficiently reclaimed by the ploughs and harrows, for producing a crop either immediately or after being fallowed. Burning should never be practised but on soils that cannot otherwise be easily reclaimed, and that have a deep vegetable sward. Although, by means of paring and burning, the land will produce one good crop, and, if laid immediately to pasture, will have a richer herbage; yet, unless a course of crops very favourable to the land is afterwards followed, paring and burning will be found, in the end,
to

to diminish the fertility or vegetative power of any kind of soil, and especially of thin soils.

SECT. III.—MANURING.

Marl.—In this county marl has not been tried to any considerable extent; but there is no doubt of its good effect as a manure, and of the application of it being profitable, where the distance of carriage is not great. A greater quantity of this manure, per acre, than either of lime or of dung, is requisite:—From twenty to thirty double cart loads at least must be given. Its effect is near the same with that of lime; but it may be more lasting than that of an usual application either of lime or of dung, as a greater quantity is applied, and as the substance of which it consists is more gross.

Lime.—Burnt and slacked lime, next to dung, is the most general manure in use. It is found to render the land more fertile, and the grain firmer and more productive of meal or flour. If a moderate quantity of dung is applied at the same time, the good effect of the lime is more speedily and fully produced. Lime greatly increases the quantity and improves the quality of pasture. The animals are fond of grazing on lands where it has been applied. The different sorts of clover and
rye-grass

rye-grass thrive much better on limed than unlimed lands, as do likewise many other small kinds of pasture grasses.

The best method of application is to lay it on all kinds of soil when it is in as hot and powdery a state as it can be conveniently wrought. If it is intended to lime summer fallow, the lime ought to be laid on before the last ploughing, and after the land is quite clean; when a single or double turn of the harrows, followed by a moderately light ploughing, will fully answer the purpose of covering it in the soil. Lime should not be covered very deep, as probably some part of its effect depends on the action of the atmosphere, or on its attracting atmospherical vapours, as well as on its stimulating the vegetative power of the soil, by uniting with vegetable mucilage, and correcting crude substances hurtful to vegetation; and on its loosening tenacious soils, and thereby enabling the roots of plants to run more freely.

Next to summer-fallow, lime produces the best effect on old pasture land, either when it is to be kept in pasture, or broken up for a crop. It should be laid on the land in autumn, or in winter, when it does least hurt to the pasture, or to the land intended to be broken up; and it will then sink into the ground with the ordinary rains. The quantity of lime given to an acre should be proportioned to the different kinds of soil; and the quality of the lime ought to be known and considered; as lime of an inferior sort must be more liberally applied than that which is almost wholly composed of calcareous matter. If the soil is somewhat light, it is customary to give of good lime from sixty to seventy
bolls

hgow wheat measure, which is about two
ninety Winchester bushels, to the Scotch
usual to exceed this quantity on strong clay
is found to answer better for the succeed-
to give lime largely at first, than to apply it
and to repeat it in small quantities afterwards.
good method of using lime, where proper ve-
as are at hand, is to mix them as a compost.
doing this is to lay the unslacked lime and
an alternate strata, to allow them to rest in
for a few weeks, and then to turn both over,
which helps to make them incorporate, as well as
roots that may be among the earth. They
may be afterwards applied as a top dressing to
any, or to land intended to be broken up for a
other cases, its good effect will be very evi-

ness is within reach, a very considerable
manure may be accumulated by the method
been described, with the addition of a few
dung to the lime and peat moss. This
will assist the farmer in the cultivation
of crops, but particularly of turnips.
the season and other circumstances suit, lime
surface, and harrowed into the ground with
the spring, is found to answer, and grass
seed extremely well by this preparation.

Lime can seldom be got for laying on light
soils, except by lifting headlands for that

See-

Sea-shells.—Sea-shells, mixed with small sea sand, are found in a bank to the east of Blackness in considerable quantities, and are frequently laid on clay soils with good effect. The quantity of them necessary for manuring an acre is double that of lime. The effect is much the same ; but the shells, if laid on to this extent, are rather more lasting than lime.

Sea-ouze.—Sea-ouze is partially used. Its effect is good and lasting : But the shore is rather too steep for such a weighty manure being used to any great extent, or for being carried to any considerable distance.

Sea-weed.—Sea-weed is occasionally thrown in here, and always used as manure, being either immediately laid on grass land, or, which is more common, cast on a dunghill in order to rot. It is of the small leafy kind. Tangle, which is a larger sort of sea-weed, is not found so high up the frith as the boundary of this county.

Pond weeds.—In the cleaning of ponds, the mud taken from the bottom, and any vegetable matter which may happen to be growing in them, are used as a manure with good effect. But after it is laid on the ground, it should not be allowed to remain long without being covered in the soil by the plough.

Burnt earth.—Burnt earth is an exceedingly good manure for all strong soils, and, as a top dressing, will considerably enrich any kind of pasture land. In both cases I have had frequent occasion to experience its good effect, from the application of the earth, as a manure,

nure, which had been used as a covering to lime-kilns when burning.

Refuse fish.—Refuse of fish, when judiciously mixed with earth, and allowed to ferment properly, will be found a good manure. There is occasionally some refuse of whale blubber at Borrowstounness, and also some refuse of herrings, which are salted both there and at Queensferry.

Ashes.—Ashes are used, and found to be a powerful manure. In the neighbourhood of salt-works, a very considerable quantity of this useful manure is allowed to lie neglected, which might perhaps be turned to good account. The ashes ought to be carefully passed through a harp or large sieve made for the purpose. This would separate the good from the bad, and render them less bulky, and consequently the carriage less expensive. The manure would be more valuable, having little or no useless substances mixed with it; and the harder cinders, or vitrified substances, might be used either for the purpose of mending roads, or as a top dressing or covering to them, where better materials could not be procured.

Soot.—Soot is a very powerful manure, but is to be got here only in small quantities.

Salt.—Salt alone is not used as a manure. It is too expensive, and unless it were very moderately applied, it would totally destroy vegetation. The refuse of
salt,

salt, which contains a mixture of other substances, is occasionally used, and found to answer.

Hair, hoofs, bones, and feathers.—These are no doubt good manures, and ought to be used wherever they can be obtained; but they are met with in such small quantities here as to be rarely if ever tried.

Soapers waste or ashes.—This manure is frequently used in the immediate vicinity of Queensferry, where the soap manufacture is carried on to a considerable extent. If applied in as great quantities per acre as dung is usually laid on, it is found to be an useful and lasting manure for all kinds of soil, and will raise abundant crops of grain and grasses; but if it is laid on as thin as lime is commonly applied, its effect as a manure will scarcely be felt. I have at least experienced its effects in this way. In a country like this, where lime is to be had in almost every part of it, the above manure will not be much sought after; as its weight, compared with lime, is considerable, consequently carrying it to a distance would be more expensive, and there is not much difference as to the purchase price. In all chemical experiments, lime or calcareous substances are found to predominate in the soap waste; and I do not suppose that lime or any other manure can be benefited by going through the process of boiling, which it must undergo in the making of soap.

Where lime is scarce and far to carry, and the soap-waste in abundance, it ought not however to be neglected as a manure.

Ploughing

Ploughing in green crops.—Ploughing in green crops, such as vetches, peas, and clover, is seldom tried in this county: but there is not a doubt that it produces a good effect in fertilizing the soil; and where other manures are not easily procured it ought to be more frequently practised than it has hitherto been. I have tried the vetch in this way, and experienced its good effect to be little if any thing short of dung, and it is a much cheaper manure.

Town dung.—Sweepings of streets are frequently used, but are found to be rather of a weak quality; their effect not appearing to last above two years.

Yard dung.—Yard dung made in winter, if trodden by cattle, will be found not to ferment much. It is commonly carried to the field in winter and laid up in a large heap or dunghill, in order to make it rot better, that it may act upon the soil with due effect, and that it may be ready for being applied when wanted in the course of the season. It is not reckoned a good practice to let dung lie very long in a great heap; as this, without doubt, would much diminish its bulk; and the dung would lose much of its richness by evaporation. It should, if possible, be applied when it is soft and sappy, neither too fresh nor too rotten, but in the medium between these states. When it is much rotten its effect is more immediate and powerful, but not so lasting. On the contrary, when moderately rotten, its effect is found to be more gradual and durable.

In order to cause a proper and equal fermentation in dunghills, care should be taken to mix the different kinds

kinds of animal dung well together. If this is not attended to, horse dung, when not sufficiently wet, will heat too much, turn dry and mouldy, and thus lose its good qualities. In compounding all kinds of dunghills they ought if possible to be made and kept neither too wet nor too dry, but in the mean between the extremes, in order to prepare the dung in the best manner.

Woollen rags.—Woollen rags are a good manure, and are particularly useful in cultivating crops of potatoes.

SECTION IV.—IRRIGATION.

IRRIGATION, however valuable it may be, cannot be carried on to any considerable extent in this county, the rivers or waters being commonly bounded by high banks; and even where the banks are nearly level, mills and different properties intervene between the proper inlets and outlets, so as to render that useful and very profitable improvement almost impossible to be effected. Even the catch-water mode cannot be applied to any great extent, although, in particular situations, it is practicable, and highly deserving attention. The circumstance of its not having been tried here may have been

been occasioned both by its value not being well known and by the mode of executing the works necessary for it not being properly understood.

There is a very good treatise on the Gloucester method of irrigation published by T. Wright, which may be advantageously perused by those who wish to become acquainted with the subject ; and also another by Mr Smith on the Duke of Bedford's improvements in irrigation.

L

CHAP.

CHAPTER XIII.**EMBANKMENTS.**

SECTION I.—AGAINST THE SEA.

THERE was an attempt lately made, by the Marquis of Douglas, to embank against the sea from a thousand to fifteen hundred acres, belonging to Kinniel estate, on the west of Borrowstownness. For this purpose a number of workmen were employed in fixing stakes, intertwined with small wood in different directions in the ground, so as to cause the space intended to be embanked against the sea to be filled with a greater depth of sea-ouze. When this was properly effected, they meant to proceed to make the embankment or dyke. The work, for the present, has been discontinued, not having succeeded according to expectation.

It is to be regretted that such an useful and probably practicable improvement should fall to the ground. Such land, when laid dry, and converted into corn or grass husbandry, exceeds in fertility any other kind of soil which is to be met with in this quarter.

CHAPTER

CHAPTER XIV.

LIVE STOCK.

SECTION I.—CATTLE.

THIS county has not been noted for any remarkable peculiarity of breed of cattle. Some of the proprietors have introduced the Leicester breed, as well as the best Annandale, which last seems to be near the same with the best Galloway; and they have likewise tried some of the best Highland bulls; all of them being of fine forms for breeding in their respective kinds. But, after the first crossing, these breeds are found to fall off in the produce both of milk and butter, and to yield less of them than can frequently be obtained from a well chosen breed from the county of Fife. A little more attention to the best sort of the Fife breed, and choosing always both bulls and cows of the best form, with other good qualities, would no doubt have a very great effect in improving the stock of cattle in this

L 2

country,

county, not only for milk, but also for fattening and for sale.

The breeding of cattle, except for the dairy, has been little attended to. Such as are not needed for the dairy are generally fattened for the butcher. In the upland parts of the county, however, breeding is partially carried on; and the spirit for improving the form prevails more now than it did formerly. Thirty years ago, the breeding of large and active work oxen was very common, but is now almost totally laid aside; the labour being wholly performed by means of horses. It is to be regretted that the practice of working oxen is so generally discontinued †; as upon large farms, where constant ploughing is required, they might be used with advantage; and it is found that they may likewise be employed in working thrashing-mills, provided the mills are calculated to answer their motion or pace. But on small farms, where few teams and frequent changing from one piece of work to another are requisite, and also where dispatch is wanted on hard roads, often too in warm as well as wet weather, oxen can never be used with safety and advantage.

West-Lothian is conveniently situate for purchasing cattle and other kinds of live-stock from the adjacent counties, and particularly at the three great markets, or trysts as they are called, at Falkirk in Stirlingshire, on the second Tuesday of August, September, and October, where almost all the different breeds in Scotland

† This subject will be more fully considered at the end of the section.

ry be got. There are also passage-boats at
 rry† for communication with the county of
 the northern counties of Scotland, in both
 ttle are bred to a considerable extent. All
 umstances, as well as the fitness of most of
 in West-Lothian for feeding, and the conve-
 nation of the county for markets for fat stock,
 breeding to be little followed. But what is
 ht no doubt to be of the best kind which the
 l support; as such kinds are as easily, if not
 ly, maintained, and usually bring higher prices
 t than the worse proportioned forms. If sy-
 form could be combined with the property of
 undance of milk, rich in quality, and affording
 butter, this would be a most important and
 improvement.

respect to the kinds which answer best for beef
 ng, none is known to equal full bred Highland
 ifers, or cows, either for smallness of bone, or
 ng on a moderate quantity of food, and laying
 and fat on the proper parts, and for affording
 st beef, and of the highest flavour, in the

-In winter the common food is straw, hay,
 times turnips, together with straw or chaff in
 ; and when the ground is not covered with
 e cattle are turned out to old pasture grass.

L 3

In

an account of the passage at Queensferry, see the
 , No. 6.

In summer they are invariably pastured on young clover and other artificial grasses, or on old inclosed pastures.

Dairying.—Different opinions prevail in this, as well as in many other counties, in regard to the making of butter, both as to quantity and quality. As to the quantity, churning the milk is the most productive. This opinion is supported by the practice of those who are reckoned the most thrifty and money-making housewives in the county. With regard to the quality, there is not a doubt that, if made from the cream only, the butter will be considerably richer, and the taste and flavour higher, provided due attention be paid to keep the vessels clean, and proper care be taken to churn it when in the best state, which is well known by every attentive housewife and dairy maid. The last mentioned kind, however, when salted, is apt to lose its good flavour sooner than the former. This may perhaps be owing to its richness resisting the salt; whereas the other, made from the milk, being poorer, and more porous, takes in a greater quantity of salt, which keeps it longer sweet.

The plunge-churn is the one most generally used. The plunger is usually wrought by the hands. A hand lever also, which is fixed to the top of the rod of the plunger, and which turns on a fulcrum fixed to a beam in the inner roof of the house, is occasionally used, and with advantage.

The best and most cleanly vessels for keeping milk, and, in the opinion of many, butter also, are good earthen ware; and the use of them would probably become
more

more general were it not for their being so liable to be broken by the carelessness of servants. Next to these are wooden dishes, which are almost in universal use here. The greatest attention is necessary to keep them clean and in good order. When milk is kept in lead, it is reckoned not to retain so pure and good a taste as in the other vessels; and lead, besides, is supposed sometimes to communicate a deleterious quality to the milk.

In winter, most people keep their milch cows in houses, tied to stakes, and fed in stalls with straw, hay, or green food, and frequently with boiled chaff, light grain, and a few potatoes. Cabbages are occasionally given as food to them, which is supposed to increase the quantity of their milk. They are commonly allowed to go at large, either in the farm-yard or in an adjacent inclosure, for a few hours in the day. Those which are fed with turnips for the butcher are usually tied to stakes in sheds: but it is perhaps a better method to let them go loose in the yard, provided they have a shed or dry place to which they may retire in wet weather. In this case, troughs or stalls should be put up, in different places of the yard, for holding their food. This method, besides permitting the animals to eat when they choose, and conducing to make them retain their coat of hair better than those which are tied to stakes, enables them to lie cleaner and drier, and to keep themselves free from vermin, by leaving them at liberty to lick themselves with their tongues. All these circumstances are of no small advantage in the feeding of cattle. The method last mentioned has been tried in this county, and found to answer well.

Distempers.—The distempers of cattle are not numerous. Milch cows, however, are not unfrequently subject to what is here called a weed, which is a kind of feverish affection. It may generally be cured by letting a little blood, and by giving them warm food and drink for a day or two. When not giving milk, and when feeding for the butcher, the same distemper often attacks them in the months of August and September; and, falling on the milk vessels, very soon reduces them to skeletons. As soon as it is observed to seize them, which commonly happens without any previous warning, as it comes on in one night, it is customary to bleed them copiously, and not unfrequently to cut off one or more of the teats, where the distemper is chiefly seated. This operation, by forwarding the discharge of the matter which is lodged within, for the most part gives them relief.

There is a distemper which attacks young cattle of both sexes, and for which, if they are once seized, there is no remedy known here. It is called the black-spald. It begins with a lameness in one limb or quarter, and, in a few hours, or in a day at most, kills the animals. It would appear to be a mortification; for if blood is attempted to be let, it will not run. No preventive has yet been found out, except bleeding the cattle annually before autumn, and not pasturing them on very rich lands, although this does not always succeed. Cattle above three years old are seldom subject to this distemper.

If a disease in the liver seizes cattle, they do not often recover. It commonly ends in a scouring, which gradually carries them off. It is generally better to dispose

pose of them as speedily as possible, than to attempt curing them; for, in the last case, much food is wasted, and the animal pines away without any benefit arising from it.

Calves are sometimes attacked with a disease in the navel, which kills them; but it is not very frequent.

The swelling of cattle, by eating too great a quantity of clover, potatoes, turnips, or cabbages, is likewise a distemper to which they are liable. In order to cure it, a full Scotch pint of water, with as much salt as it will speedily dissolve, may be poured into the animal's stomach. This will operate as an emetic, and effect almost an instant cure. Two egg-shells, filled with tar, and put by the hand down the throat into the stomach, will answer the same purpose. A small flexible hollow leathern tube, open at both ends, with one end introduced gently down the throat into the stomach of the animal, and the other left on the outside of the mouth, has likewise been found to discharge the fixed air, and thus to effect a cure.

SECTION II.—SHEEP.

THE breeds of sheep here are various. In the inclosures of some of the noblemen and gentlemen are to be found the Bakewell, the Dorchester, the Spanish, the South-Down,

South-Down, the Hereford, the Scotch black faced hill breed, and even the native Shetland kind. In some places also are still to be found remains of the Society's flock ; * such as the Cheviot, and some of the other breeds

* In January 1791; this society, termed the British Wool Society, was formed by Sir John Sinclair, in conjunction with a considerable number of noblemen and gentlemen, for the purpose of improving the breeds of sheep most suitable to the different counties or districts of Scotland. One great object of the Society was to attend as much as possible to the quality of the wool, in so far as it might be consistent with the improvement of the form and the health of the animal. In the same year, they accordingly, by donation and purchase, procured, from England and foreign countries, about 800 sheep of the different breeds held in estimation for the quality of their wool. In the course of the year, 555 of these were disposed of to various persons all over Scotland, for the express purpose of trying the experiment. This diffusion of the different breeds, it is believed, has had the good effect of turning the attention of store farmers to try such crosses as might tend to improve their flocks, both as to form and the quality of the wool. In 1795 and 1796, after the Society had used every endeavour to promote the end intended, they sold the remainder of their stock, not judging it necessary for the benefit of the public to retain them longer in their possession. A small remnant of the different breeds which belonged to the Society are still preserved by different individuals in this county. They have been found to thrive well, the Spanish breed excepted, which appears to be much more delicate than any of the other breeds.

breeds above mentioned. All these breeds thrive well ; and generally receive no other food but grass, except in time of snow, when it is necessary to furnish them with hay and turnips. Some farmers are trying to breed from the improved Bakewell kind : but when the delicacy of such stock, and the quantity of green food requisite for their sustenance in winter, are considered, it is believed that the scheme will not prove in the end a profitable one ; unless such a number were kept as to afford a return which would compensate a shepherd's wages ; and even then it might be doubtful.

The easy access to the proper markets for purchasing the Scotch kinds in the spring season, which excludes the necessity of keeping them through the winter ; their requiring little or no attendance, if the fences are good ; and the whole stock of them being ready to be again sold to the butcher by the end of October, are circumstances which render the returns more quick and certain, and probably greater, than those which arise from either breeding or feeding the highly improved kinds. It is besides very difficult to find a good market for the last mentioned kind. The inhabitants, both of the towns and country in this neighbourhood, do not relish this sort of mutton so well, especially when fed very fat, as they do that of the native breed. If, however, the Cheviot breed of stock could be purchased in the spring, considering the superior value of their wool, they

A more minute account of this Society will be found in the reprinted Agricultural Report of Edinburghshire, by Mr George Robertson, published in 1795.

they ought certainly to be brought into more general use. They are found to be as hardy, and as little subject to accident or disease, as the Scotch race; and the mutton is of as fine a flavour, and the weight and fat not inferior: they are as careful of their lambs; and as easily, if not more easily, kept within fences. Upon the whole, they appear to be an useful and profitable breed.

Food.—The first year's crop of clover and rye-grass is found to be the earliest spring food for ewes and lambs. As long as turnips last, they answer well as spring food, and contribute to make good lambs.

Wool.—The value of the wool of the Scotch breed may be from 8d. to 1s. per fleece; and that of the Cheviot breed from 3s. to 4s.

The price of a Scotch ewe, purchased for breeding or feeding, varies according to the demand, and the plenty or scarcity of the stock, and also according to the size and weight, from 10s. to 18s. per head. The wedders, or males, of the same breed, twice shorn, or about three years old, cost from 18s. to L. 1. 4s. as they happen to be strong in the bone, and in high condition. In autumn they are sometimes purchased, at a cheaper price, for eating winter food. A good Scotch wedder, when fat, will weigh from 12 to 15 pounds per quarter, Dutch weight; and will afford eight or ten pounds of tallow.

The good feeding pastures are reckoned to fatten per acre from three to four ewes and lambs of the Scotch kind. A lamb, when fully fat, will weigh from five to
seven

seven pounds per quarter; and an ewe, from nine to twelve pounds, both Dutch weight.

Distempers.—The distempers of sheep are, the rot, which, however, is not frequent; occasionally the sickness, or cholic; scouring, for which a change of pasture is the best cure known; the sturdy, or water in the head or brain, for which no radical cure is known; the foot rot, for which paring and cleaning the foot, with a moderate application of caustics, are serviceable; and the scab. The last mentioned distemper ought to be carefully guarded against; otherwise one sheep tainted with it will, in a short time, infect the whole flock. Various remedies have been held out of late, and all said to be effectual; such as sulphur, spirit of turpentine, and oil, either animal or vegetable, mixed together, and rubbed on the place. There is a preparation of mercury, which is said to answer the same purpose. In order, however, to give effect to any remedy, it must be applied in an early stage of the distemper, which otherwise will become obstinate, and prove ruinous to the flock. It will so infect their walks, especially in the vicinity of trees, hedges, or walls, that these will require to be kept more than a winter altogether free from sheep, in order to get completely rid of the contagion.

Price.—The price of horses is now greatly enhanced. One of the work kind, which twenty years ago would have cost L.18 or L.20, costs now forty guineas, and, if very good and strong, fifty guineas, and sometimes more. The small saddle kinds, usually called galloways, cost from eighteen to twenty-five guineas, and good saddle cavalry and road horses from thirty to sixty guineas and upwards.

Decline in value.—A horse frequently begins to be employed in farm labour when three years old, though it would contribute more to his health and strength if he were not wrought till the age of four or five. He arrives at full strength when six years old, and continues in vigour until he is nine. After this his teeth begin gradually to shorten and his tongue generally to enlarge. He falls off by degrees in strength and activity, and at length can hardly masticate his food. If he arrives at the age of eighteen or twenty years, he is scarcely worth the keeping, where hard labour is requisite. There are, however, many exceptions, some wearing out much sooner than others. From eight to twelve years of age, the decline in the value of horses may approach to one-fourth of the original price. After this, the value declines proportionally more every year.

Harness Prices.

Cart saddle and breeches	-	-	L.1	12	0
Collar and hames	-	-	1	5	0
Bridle with blinds	-	-	0	12	0
Long iron chains for traces	-	-	0	12	6
Leather mounting to ditto	-	-	0	12	6
Back-band	-	-	0	2	6

Food.

Food.—The kinds of food given to horses are, oats, boiled barley, and beans both boiled and raw. The quantity is commonly one-fourth of a peck at each feed, which is given twice a-day in winter, and thrice in the spring at seed time, and until broad clover is ready. This is usually about the middle of June. In winter some substitute potatoes, either raw or steamed, instead of grain, for supper meat to horses, the quantity of potatoes allowed being about double that of grain. The potatoes should always be washed clean. They are found to be conducive to the health of horses employed in ploughing. Every kind of straw, especially that of peas and beans where it can be obtained, is given as food to work horses. Hay also is occasionally given.

Cut clover is the cheapest and best summer food for horses. By this method of feeding, an English acre, if the land is good, will maintain a horse during the summer; whereas, were he allowed to range the ground he would require at least twice as much, and scarcely be well supplied. In no way can a farmer increase the quantity of dung, or improve its quality so much as by feeding all kinds of stock either in the house or yard with green crops, if he has accommodations necessary for the purpose. When plenty of litter is afforded, the quantity of dung may be increased to almost any extent that is wanted.

Expence.—Without entering into a calculation of the value of particulars, which is ever changing, the average expence of maintaining a ploughman may be stated at L.30 per annum, and that of two farm horses for the draught, together with repair of implements and har-

M

ness,

SECTION III.—HORSES.

In this county the breed of work horses has been much improved of late years. They are from 14 to 16 hands high; but are rather low in the fore quarters. They have good hoofs, and a clean thin bone in the leg; and are not much subject to swelling in the legs. They are hardy and active, and in general patient in the draught. This breed was much improved, in figure and motion, by a cross of a stallion of the famous Mr Bakewell's breed with a hunting mare, the property of Mr Henderson, late farmer at Craigtoun, who kept up stallions from this cross.

In order to promote the most durable breed of horses, the present Earl of Hopetoun, some years ago, procured some mares and a stallion both of the best breed from Suffolk. These, as well as their immediate offspring, proved excellent horses for the draught. They had strong and heavy carcasses, and clean limbs; and were healthy, active, and patient of labour. But his Lordship having permitted his farmers and others to cross their mares with the stallion, the issue, although they possessed the qualities of activity and durability, proved, in general, but indifferent as to form or figure, and did not meet with a ready sale at market. These circumstances made farmers rather prefer breeding from the best old native kinds.

Both the gentry and farmers are in use to breed hunting and saddle horses. They cross their mares with
the

the best hunting and blood stallions; by which an excellent stout, active, and useful kind of horses is obtained for hunting, for the cavalry, and for the road.

It is customary among the farmers to breed rather more horses than are needed on their farms, the surplus being commonly sold for the use of the adjacent counties.

In the year 1796, the number of saddle and carriage horses in the county was	253
Employed in work and agriculture	1745
Young ones not employed in work	498
Total	2496

Work performed.—Formerly, when four oxen and two horses were used in the plough, the quantity of work performed in a given time was more uniform than at present, whatever might be the nature of the soil. This was owing to the great power employed in the draught. But as farm work is now all performed by horses, and ploughing chiefly by two horses a-breast, the ploughman managing both the horses and plough, the quantity ploughed in a given time is very various, being much more modified by the different kinds of soil, and other circumstances. In light, dry, and easy grounds, a man with a pair of horses will often plough an English acre in a day; but in strong, stiff, and tenacious soils, three-fourths are as much as can well be done. The quantity, however, is often less in both cases.

Price.

should lie dry and be kept clean. This management contributes to make them healthy, feed better, and fatten faster.

SECTION VII.—RABBITS.

THERE are no rabbit warrens in this county. Only a few of the wild native grey rabbits, which lodge in rocky places or among furze, are found. It is alleged that the foxes, which are rather too plentiful here, have done much to extirpate, or at least to keep under, this breed of the rabbit.

SECTION VIII.—POULTRY.

TURKEYS, geese, and ducks are bred by most of the gentry, and also by several of the farmers. The common hen is universally reared by all classes, either for the table, for its eggs, or for sale. It is the most profitable of the whole tribe of poultry.

SECT.

SECTION IX.—PIGEONS.

THERE are pigeon-houses belonging to almost every nobleman's and gentleman's seat in the county. Pigeons have of late been deemed not so prolific as formerly. Some ascribe this to their eating more wheat than could be got by them in former times, which kind of food is considered as detrimental to them; but it may proceed from other causes, viz. from more land being in grass, from much fewer pease being sown, and from the land being better cultivated, and consequently having fewer seeds of wild or native plants left in it for pigeons to feed upon.

SECTION X.—BEES.

BEES are kept all over the county; but they have not succeeded for some years past, owing to the long and severe springs, and variable weather which prevailed in the honey-making season.

CHAP. XV.

RURAL ECONOMY.



SECTION I.—LABOUR.

THE price of labour has risen like that of every other commodity. Thirty years ago the wages of a day labourer were from ninepence to a shilling per day, but now they are from 1s. 6d. to 2s. 6d. In time of harvest, which usually lasts from two to four weeks, the men receive from 1s. to 2s. per day with victuals, according as the demand happens to be less or greater. In summer the women receive for field work from 9d. to 10d. per day without victuals, and in harvest from 8d. to 1s. 6d. with victuals.

Piece-work.—Piece-work, in the making of fences, and in many other branches of husbandry, is not uncommon. Although at first view it may appear more expensive than other modes; yet if most of the requisite labour could be done in this way, it would generally

ly

ly be found for the benefit both of the employer and the person employed. This method stimulates the labourer to perform more work, as well as to execute it better, for unless the work is well executed the labourer will be little employed, or perhaps not employed at all.

Smith work is done by the piece. Horses are shod from 7d. to 1s. per shoe, according to the size and weight of the shoe. The price of removing a shoe is twopence-halfpenny. Shoeing a farm work horse may cost from 10s. to L.1 per annum. All other smith-work, when unpolished, costs from 7d. to 8d. per pound, the iron being furnished by the smith. In some places, farmers make a bargain with their smiths for a year, at a fixed rate for every plough and two horses. In other places, the farmer furnishes the iron, and the smith performs the work required at a rate agreed upon.

The price of Swedish iron is L.1. 8s. per cwt. Twenty years ago it was only 16s.

Masons and Joiners Wages.—In summer journey-men masons receive from 3s. to 3s. 6d. per day; joiners from 2s. 6d. to 3s.; and labourers from 1s. 6d. to 2s. 6d. From Martinmas to Candlemas their respective wages are not so high by a fourth part at least.

Farm-Servants.—Most of the farm labour is performed either by servants called hinds, who have separate houses to live in, and who are hired for a whole year, or by other servants who lodge in the farm-house, and are hired for half a year. A hind's wages for a year may be stated nearly as follows:

M 4

Yearly

Yearly rent of a house and garden	-	L.1	10	0
Paid in money	-	10	10	0
Weekly allowance called kitchen	-	1	10	0
Six bolls and a half of oat-meal, at eight stone				
Dutch per boll, present sale price		10	8	0
Eight pecks of potatoes planted	-	1	10	0
Coals carted home	-	1	0	0
Harvest diet, one month	-	1	4	0
		L.27	12	0

Several farmers allow them a milch cow as part of wages instead of some of the above-mentioned particulars. In this case a hind's annual wages may amount to about L.30.—The hinds are commonly married, though not always. A servant who has his meat and lodging furnished in the farm-house receives from L.3 to L.7 for the half year, and some able and active ones even more. The wages of domestic women-servants are from L.4 to L.7 a year; according to their qualifications.

Hours of work.—The common hours of work for day-labourers, including hours for rest at meals, are from six o'clock in the morning to the same hour in the evening in summer, and from day light till dark in winter. The number of work hours for hired servants is not fixed, but commonly does not much exceed what has been stated; unless in time of hay-making and harvest, when as much work as possible is done through the whole day. Women-servants are employed in house-work from five or six o'clock in the morning, to eight or nine at night.

Cottages,

Cottages attached to farms.—In various parts of the county there are cottages belonging to farms, situate either beside the farm house and offices, or in their immediate neighbourhood. On account of always affording labourers when wanted, they are extremely advantageous. Such labourers are much more peaceable and diligent than those who are got from towns; being free from the habits of idleness, and from other vices which are usually contracted there. Were each farm in the county furnished with a few cottages, having proper accommodations, it would prove beneficial both to the farmer and the public. By reason of the present improvements in agriculture, there is a constant demand for labourers; and where houses are not wanting, where food is plentiful, and labour in demand, population will not fail to increase; and this class of population, when distant from manufacturing towns, are less apt to be licentious in morals, or given to sedition. Four cottages to a farm of a hundred Scotch acres would probably be found quite sufficient.

As the word cottage has different significations, it will be proper to explain more precisely what is meant by it in this place. A cottage here means a house for the use of the farm, in which either a man, who works constantly on the farm, lives with his family, or one who, when he does not work himself, provides a labourer to be ready at the call of the farmer: the wages, in the last case, being paid by the day.

SECTION II.—PRICE OF PROVISIONS.

	s.	d.
Beef per pound Dutch weight, from 6d. to	0	7
Veal, ditto	0	8
Mutton, ditto, from 6d. to	0	7
Lamb, ditto, from 6d. to	0	8
Pork, ditto	0	5
Wheat bread per 4 pound and 5 ounces Dutch	0	10
A hen	2	0
A duck	1	6
A goose	4	6
A turkey	7	0
Hen eggs per dozen, from 7d. to	1	6
Sweet milk per Scotch pint	0	4
Butter milk, ditto	0	0½
Butter per pound Trone weight, from 1s. 4d. to	1	6
Cheese, made in the county, per pound Trone weight, from 6d. to	0	7
Oatmeal per peck of 8 lib. Dutch weight, from 1s. 6d. to	2	0
Potatoes per boll of 24 st. Dutch, from 8s. to	12	0
Honey per Scotch pint, from 7s. to	10	0

It is proper to take notice that the prices of provisions of the best quality are here meant, and that they cannot be stated with perfect exactness. They are, however, pretty near the average for the last two years, viz. 1808 and 1809.

For

For the prices of grain, see the Table of the Fiars of West-Lothian in the Appendix, No. 5.

SECTION III.—FUEL.

As coal abounds in this county, very little other fuel is used. The prices of coal are different at the different collieries. In the upland district, great coals, mixed with chows, or smaller coals, are sold at 3¹d. per cwt. At Borrowstounness and Grange, great coals are sold at 10s. per ton; chows, at 7s. 6d.; and culm, at 4s.

CHAPTER

CHAPTER XVI.

POLITICAL ECONOMY.

SECTION I.—ROADS.

Few counties are better accommodated with good roads than this. There are three great roads leading from Edinburgh to Glasgow which run through it, and another from Edinburgh to Queensferry. They were originally made from a fund borrowed by act of Parliament. By the act, the landholders were appointed trustees to direct the making of them, and also for their future management. They are kept in repair by tolls erected on purpose. The interest of the borrowed money is paid from the surplus of the toll-money.

The parish roads, which are numerous, are made and kept in repair by an act of Parliament, appointing the heritors of each parish, whose valued rent is not less than L.100 Scotch, or their deputies, to be managers and assessors. Each parish, within itself, furnishes the sum which is found necessary for making and keeping
its

its roads in repair. The sum paid by each heritor and farmer is rated according to the number of ploughgates of land which either possesses; seventy acres being reckoned a ploughgate. The annual assessment for each ploughgate has been from 15s. to L. 1. 10s.; and the farmer, as well as the proprietor, pays the full amount of this sum for every ploughgate which he occupies. Although the roads are in a tolerable state, a heavier assessment will perhaps be necessary to make them good and to keep them up.

SECTION II. and III.

Nothing particular occurs in these sections.

SECTION IV.—FAIRS AND MARKETS.

LINLITHGOW, the chief town of the county, has six fairs in the year: The first on the first Friday after the second Tuesday in January; the second on the 25th of February, if it does not fall on a Saturday, Sunday, or Monday, in which case it is held on the Tuesday following; the third on the third Friday of April; the fourth on the second Thursday of June; the fifth on the 2d of August, if it does not fall on a Saturday, Sunday, or Monday, in which case it is held on the Tuesday following; the sixth on the first Friday of November.

venber. Horses, cattle, and milch cows, are the principal commodities at these fairs. At Linlithgow there is a weekly market, on Friday, for grain and butcher meat.

Bathgate has seven fairs in the year ; in most of which the prevailing article is cattle. A few horses also are occasionally exposed to sale. The first fair is held on the second Wednesday of April ; the second on the first Wednesday in May after Whitsunday, old style ; the third on the fourth Wednesday of June ; the fourth on the third Wednesday of July ; the fifth on the third Wednesday of August ; the sixth on the fourth Wednesday of October ; and the seventh on the first Wednesday after Martinmas. The new style is always meant when the old is not expressed.

SECTION V.

NOTHING particular occurs in this section.

SECTION VI.—WEIGHTS AND MEASURES.

Scotch Weight.

1st, *Troy, for butcher meat, iron, rough calf-skins, undressed flax, and meal, within this county.*

Eng. Troy Gr.

29.75	dr.		
476	16	oz.	
7616	256	16	lb.
121856	4096	256	16 st.

2d,

2. *Tron*,—For wool, butter, cheese, rough hides, and tallow, within this county.

Eng. Troy Gr.		Drop.	
29.75		16	oz. *
476		320	20 lb.
9520	5120	320	16 st.

3. *Avoirdupois*,—For tanned hides, dressed flax, combed wool, and groceries.

Troy Grains.		dr.		oz.	
27.3515625		16		16	lb.
437.625		256		224	14 st.
7002	3584	1792	112	8	cwt.
98028	28672	35840	2240	160	20 ton.

† The common practice is to use the avoirdupois ounce, of which 22 are reckoned nearly equal to 20 tron ounces. Ed.

Scotch.

Scotch measures of length, raised from the standard ell.

Eng. Inch.	GunterLink.	Eng. Ft.	Eng. Ell.	Fall or Road.	Center Chain.	Furlong.	Mile.*	Eng. Yds.
8.928	12	1.344	3.1	6	10	8	==	6.2
37.2	4.166	18.6	74.4	4	80	==	==	24.8
223.2	25	74.4	240	40	==	==	==	1984
892.8	100	744	2400	320	==	==	==	
8928	1000	5952	1920					
71424	8000							

In this Table English inches and feet are set down instead of Scotch, because Scotch inches and feet are little used. The Scotch are as follows :

Scotch inch.	English inches.
12 Scotch foot†	= 1.0054054
37 3½ Ell.	= 12.064864
28 = 2 Bolt.	

* This is the computed Scotch mile, although by act 44 James VII. in 1685, the Scotch mile is ordained, like the English, to contain 1760 yards of 36 inches each.

† The glaziers foot is commonly reckoned 8 inches; but the above is the standard Scotch foot for wrights, glaziers, &c. by act 18. in 1663.

Scotch

Scotch Square Measure.

Eng. Inch.	Gunter link.						Gunter Chain.	Rood.	Acre.
144	1806	Eng. Ft.	Ell.	36	Fall.	16			
1383.8	17.361	9.61	576	16					
49818.2	625	345.96	576	16					
797091.8	10000	5535.36	576	16					
1992729.6	25000	13838.4	1440	40	2.5				
7970918.4	100000	55353.6	5760	160	10	4			

The rood of mason or slater work is 36 square ells.

English Square Measure.

Inch.	Gunter link.						Fole or Perch.	Gunter Chain.	Rood.	Acre.
144	2.295	Foot.	9	Yard.	25	27				
1296	20.661		25	27	Pace,	10.89				
3600	57.392		272	30						
39204	625		4356	484	174	24	16			
6 72 64	10000		10890	1210	435.6	40	2.5			
1568160	25000		43560	4840	1742.4	160	10	4		
6272640	100000									

*A Table for converting Scotch Acres into English, and
English Acres into Scotch.*

Scotch.	English Acres.	English.	Scotch Acres.
Fall 1	.0079421	Pole 1	.049184
Rood 1	.3176859	Rood 1	.1967352
Acre 1	1.2707438	Acre 1	.7869407
2	2.5414876	2	1.5738814
3	3.8122314	3	2.3608221
4	5.0829752	4	3.1477627
5	6.353719	5	3.9347034
6	7.6244628	6	4.7216441
7	8.8952066	7	5.5085848
8	10.1659504	8	6.2955255
9	11.4366942	9	7.0824662
10	12.707438	10	7.8694068

Table of Scotch Measures of capacity for Liquors.

Solid Inch.									
6.46275	Gill.								
25.851	4	Mutchkin.							
51.702	8	2	Chopin.						
103.404	16	4	2	Pint.					
206.088	32	8	4	2	Quart.				
327.232	128	32	16	8	4	Gallon.			
6617.856	1024	256	128	64	32	8	Barrel.		

Scotch

Scotch measure of capacity for things dry.

1. Wheat, pease, beans, rye, and white salt, raised from the standard firloft containing $21\frac{1}{4}$ pints.

Solid Inch.					
103.404	Pint.				
137.333	1.3281	Lippie or Forpet.			
549.333	5.3125	4	Peck.		
2197.335	21.25	16	4	Firloft.	
8789.34	85	64	16	4	Boll.
140629.44	1360	1024	256	64	16 Chalder.

2. Oats, barley, and malt, raised from the standard firloft containing 31 pints.

Solid Inch.					
103.404	Pint.				
200.345	1.9375	Lippie or Forpet.			
801.381	7.75	4	Peck.		
3205.524	31	16	4	Firloft	
12822.096	124	64	16	4	Boll.
205133.53	1984	1024	256	64	16 Chalder.

Table for converting Scotch standard bolls of whey, beans, pease and salt, into Winchester bushels; quarters; and Winchester bushels and quarters into Scotch bolls.

<i>Scotch into English.</i>			<i>English into Scotch.</i>	
Scotch Standard.	Winchester.		Winchester.	Scotch St. Boll
	Bushels.	Quarters.		
Lippie 1	.0638635	.0079829	Quartern 1	.015
Peck 1	.2554542	.0319318	Peck 1	.061
Firlot 1	1.0218167	.1277271	Bushel 1	.244
Boll 1	4.0872667	.5109083	Quarter 1	1.957
2	8.1745333	1.0218167	2	3.914
3	12.2618	1.532725	3	5.871
4	16.3490667	2.0436333	4	7.823
5	20.4363334	2.5545417	5	9.786
6	24.5236	3.06545	6	11.743
7	28.6108667	3.5763583	7	13.701
8	32.6981334	4.0872667	8	15.651
9	36.7854001	4.598175	9	17.611
10	40.8726667	5.1090833	10	19.571

TABLE for converting Scotch standard bolls of barley oats in Winchester bushels and quarters; and Winchester bushels and quarters into Scotch bolls.

<i>Scotch into English.</i>			<i>English into Scotch.</i>	
Scotch Standard.	Winchester.		Winchester.	Scotch St. Boll
	Bushels.	Quarters.		
Lippie 1	.0931656	.0116457	Quartern 1	.010
Peck 1	.3726625	.0465828	Peck 1	.041
Firlot 1	1.4906502	.1863313	Bushel 1	.167
Boll 1	5.9626008	.7453251	Quarter 1	1.341
2	11.9252016	1.4906502	2	2.683
3	17.8878024	2.2359753	3	4.025
4	23.8504032	2.9813004	4	5.366
5	29.813004	3.7266255	5	6.708
6	35.7756048	4.4719506	6	8.050
7	41.7382056	5.2172757	7	9.391
8	47.7008064	5.9626008	8	10.733
9	53.6634071	6.7079259	9	12.075
10	59.6260079	7.453251	10	13.416

The standards of dry-measure were, by act of parliament of 1618, committed to the custody of the borough of Linlithgow; and, therefore, Linlithgow measure, and standard measure, are commonly understood and spoken of as one and the same thing; but the fact is otherwise. In Edinburgh, Linlithgow firlots are avowedly made above one and a half per cent. larger than the legal standard. Linlithgow firlots, got from Linlithgow as standards for the town of Perth, were found by experiment, of the weight of water which they contained *, to be almost three per cent. the wheat measure, and four per cent. the barley measure, larger than the legal standard. Linlithgow firlots, in like manner, got from Linlithgow as standards for Kinross-shire, were found to be, for wheat above two and a half per cent. and for barley above three per cent. larger than the legal standard: what the deviation may be in other places has not been tried. The Edinburgh measure, marked as such, appears to be the only exact legal measure for corn.

It may be proper to mention that the standards of Scotch weights and measures were at first established by commissioners appointed by an act of Parliament of 1617, in the reign of James VI. parl. 22. cap. 8. for

N 3

the

* It may be remarked, that this mode of adjusting measures of capacity by the weight of water taken at different times and in different places, is subject to error, unless the purity or density of the water used in the experiment is known to be the same; for the weight of a given bulk of water is modified by this circumstance.—Ed.

the purpose of settling a method for reducing measures and weights to uniformity.

These commissioners made the ell of Edinburgh the unit of lineal measure, and committed the keeping of it to the city of Edinburgh. They made the Stirling pint or jug the unit of liquid measure, and committed the keeping of it to the borough of Stirling. They made the firloft of Linlithgow the unite for dry measure of wheat, rye, beans, pease, meal, and white salt. And as malt, barley, and oats, had before that time been in use to be measured by heaping the same firloft, they thought it more expedient to calculate how much the heap added to the measure, and to make a separate firloft for oats, barley, and malt, which being struck, should exactly contain the same quantity as the other firloft when heaped. These firlofts they committed to the keeping of the borough of Linlithgow. With respect to weights, they declared the French troy stone weight to be the unit, and committed that stone to the keeping of the borough of Lanark. They ordered double standards of all these weights and measures to be made, and that two of every one of them should remain in the register in the castle of Edinburgh, and other two within the castle of Dunbarton, as a warrant for the measures and weights. The other doubles deposited with the four boroughs above mentioned, were to be used for the assizing of weights and measures, to be delivered under the mark of these boroughs for public use.

By an act in 1696, William and Mary, parl. 1. sess. 6. c. 6. it is ordained, that all sorts of meal bought and sold within this kingdom shall be sold and delivered
by

by weight, at eight stones troy weight, in place of the boll of Linlithgow measure, and so proportionally.

In 1663, Charles II. parl. 1. sess. 3. cap. 17. an act was made declaring the measure of coal to be by the Culross chaldar. But this standard is now lost.

By an act 1686, James VII. parl. 1. cap. 30. the measure of bark is settled, viz. of unbeaten bark 22 gallons make a boll, small beaten mallowie bark, the Linlithgow barley measure.

The foregoing tables, as well as all the statements which have been made respecting the standards of Scotch weights and measures, are extracted from a valuable small treatise entitled, "A proposal for uniformity of weights and measures in Scotland, by execution of the laws now in force," supposed to have been written by the late Lord Swinton, one of the Judges of the Court of Session. Printed for Charles Elliot, Edinburgh, A. D. 1779.

SECT. VII.—Nothing particular occurs on this section.

SECT. VIII.—MANUFACTURES.

THERE are no manufactures of great extent carried on in this county. The following may be mentioned : A spinning work at Blackburn, in the parish of Livingston, which may employ about 200 persons old and young ; tambouring in the parishes of Linlithgow and

Whitburn; but this business is very variable, sometimes more and sometimes fewer hands being employed: in the parish of Linlithgow, a manufacture of paper, tanning, currying, tawing, wool combing, stocking-weaving, calicoe-printing, brewing, and distilling;* at Borrowstounness a manufacture of crockery or earthen ware, a soap-work, a brewery, and ship-building on a moderate scale is carried on; in the parish of Carriden a vitriol work; and a pantile and brick-work in the vicinity of Blackness; at Queensferry a considerable manufacture of soap. "It was at Queensferry that first in Scotland the making of brown soap was brought to its present degree of perfection. This manufacture commenced about the year 1770, and has since been carried on with varying success†."

The number of hands employed in all these different manufactures bears but a small proportion to the whole population of the county.

SECT.

* There may be about 11,000 bolls of barley consumed in the distilleries of this county, which in all probability is more than is actually raised in it. A considerable proportion of the barley used in the distilleries is brought from other places of Scotland, and from England.

† See the Statistical Account of the parish of Queensferry.

SECT. IX.—COMMERCE.

VERY little commerce is carried on in this county. At Borrowstounness, it was formerly in a much more flourishing state than it is at present. The trade of that town with the continent has in a great measure ceased ; and the great Canal from the Frith of Forth to Glasgow, which enters the Frith at Grangemouth, about seven miles above Borrowstounness, has taken away much of its trade to that place.

Fishery in the Frith of Forth.—The fishery in the Frith of Forth is of too much importance to be omitted in this report. The following extract on the subject is taken from the Statistical Account of the parish of Queensferry, by the Rev. Mr Henderson, published in 1795 ; it is as follows :

“ Attempts have been made to establish a fishery here, at least such a fishery as might supply the town and neighbourhood, but hitherto without success ; although it is the general opinion that two or three fishermen might settle here to advantage. The fish to be found in this part of the Frith are cod, haddocks, whittings, skate, flounders, herrings, crabs, lobsters, and oysters. There are also some very fine muscle scalps. The herring fishery, which has lately taken place in this neighbourhood, forms a most pleasant article in a statistical account.”

“ It began at the end of the year 1792, opposite to this, and in the part of the Frith without the bay of Inverkeithing.

Inverkeithing. During that season a plentiful supply of good herrings was sent to the coast towns, and to many inland places at a considerable distance. Next season the herrings were still more plentiful, and the markets more plentifully supplied. Little was done in curing for foreign markets. The merchants who were inclined to engage in the trade, regretted that they were not provided with the necessary articles of barrels and salt. The last was a season of an extensive and profitable fishery. From the middle of October to the first of March last, from this place you could count from 80 to 100 boats almost every day busily and successfully employed. Herrings were found in great abundance from Burntisland to above Borrowstounness. Fishermen resorted to this from all quarters. A single boat often came in with thirty or forty barrels, which were sold for L.8 or L.10. A great number of herring busses came from Glasgow by the great canal, and had a most successful fishery. Vast quantities were cured and sent to the foreign markets. About six thousand barrels were cured at this port. The inland part of the country was plentifully supplied at the distance of thirty or forty miles by land carriage. The retail price here, notwithstanding, at an average, was not more than sixpence a hundred."

It is a pretty general opinion that the herring shoals have formerly frequented this part of the Frith, and might often have been found in the places where the fishery has been lately so successful. If so, it is a subject of much regret, that the opportunities of such a profitable fishery have been lost ; and the public are taught not
to

to neglect to explore the seas which surround our island, as almost every part of them is found to contain stores not only sufficient to diffuse plenty among the inhabitants, but also amply to reward and enrich the merchant who may be disposed to engage in the exportation trade."

Since the preceding account was written, the herring fishery has continued to be carried on in the Frith with different degrees of success in different years. The usual season of the herring fishery in the Frith, is from November to January or February.

Salmon Fishery.—A company of fishermen from Dumfries-shire, who had been employed in fishing on the Solway Frith, have obtained a lease for a few years from the Earl of Hopetoun, Mr Hamilton Dundas of Duddingston, and Mr Dundas of Dundas, in order to try a salmon fishery in the south side of the Frith of Forth, between Queensferry and Blackness. Their lease does not prohibit them from catching other sorts of fish which they may happen to find. It will be very advantageous to the neighbourhood if this fishery succeeds.

SECTION X.—THE POOR.

PARISHES.	No.	Ann. Income.			FUNDS.
		L.	s.	d.	
Abercorn	30	116	8	7½	L.200 Sterling voluntary assessment of heritors, and weekly collect. at church.
Bathgate *	52	81	7	5½	
Borrowstounness	24	160	0	0	Weekly collect. at church, rent of 8 acres of land, L.15 Sterl. annuity, mortcloth fees, fines for irregular marriages, and other occasional donations.
Carriden	30	32	0	0	Weekly collect. at church; and perquisites from proclamations of marriages, & from baptisms & funerals.
Dalmeny	24	70	0	0	Poors land, money at interest, voluntary assessment, and weekly collections at church.
Ecclesmachan	2	6	10	0	Weekly collect. at church, and money at interest.
Kirkliston	45	148	0	0	L.100 Sterling, some seat rents in the church, mortcloth fees, and assessments, and weekly collections at church.

* In this parish, the greatest part of the indigent males are supplied out of the revenue of friendly societies, which amounts to L.230 and upwards.

In the parish of Abercorn, the sum of L.116. 8s. 7½d. which is stated as the annual income of the poor, includes the precentor's and session-clerk's salaries, the school fees, and books of poor scholars, with some other little items.

PARISHES,	No.	Ann. Income.			FUNDS.
		L.	s.	d.	
Linlithgow	100	250	0	0	About L.700 Sterling, and 49 acres of land, & weekly collections at church.
Livingston	12	26	0	0	Voluntary contributions, & weekly collect. at church.
Queensferry	13	47	5	0	L.400, an acre of land, and house rents, and weekly collections at church.
Torpichen	9	30	0	0	L.500, the interest of which, with the collections at church, is sufficient for the supply of the poor.
Uphall	14	38	10	0	Land, money at interest, & weekly collect. at church.
Whitburn	10	70	11	10 $\frac{1}{2}$	Weekly collect. at church, mortcloth fees, marriage proclamations, & parochial assessments.
	365	1076	12	11 $\frac{1}{2}$	

In this county, very little money is raised, by rate or assessment, for the supply of the poor. It arises chiefly from the rent of land belonging to the poor, from the interest of sums of money left by different individuals for the use of the poor in the respective parishes, from the weekly collections at the churches, and from fees paid at marriages, baptisms, and funerals. By the preceding Table, it appears that L.1076. 12s. 11 $\frac{1}{2}$ d. is the sum actually raised for the supply of all the poor on the public roll of the county.* In chapter I. section

* Even this is too high, as some small sums of money, not received by the poor, are included in the column of their income on account of not being easily separated.

When the proportion of money required for supporting the poor in this county is compared with that which is raised for the like purpose in Northumberland,* where the rent of the land and mode of farming are not very dissimilar to those which obtain here, the difference seems remarkable. In Northumberland the average of the poor-rates appears to amount to about one seventh of the rent of the land; or if a seventh is thought too high an average for the whole county, a tenth or a twelfth in all probability will not, and in either case the difference is still very great.

In this county the poor-rates, or rather annual income of the paupers, are nearly in the proportion of only one sixth part of the rent. The poor-rates in Northumberland, therefore, are proportionally more burdensome than here; and as no reason can be assigned why the number of really indigent poor should be greater in proportion in that county than in this, each pauper in the former it may be supposed must receive proportionally more than one in the latter. But in England, a pauper or person on the poor's list, is not always really indigent and incapable of supporting himself; there being reason to believe that near on half of the whole number are fully able to work for their maintenance; and who, therefore, ought to be struck off the list. Of the other half, many are truly indigent; though there is no doubt that a great portion even of them receive a much larger allowance than they have a just claim to, being able to supply their
want

* See the Agricultural Report of Northumberland.

by their own labour. When these things are
 ed, the difference between what falls to the
 an English pauper really deserving support,
 a Scotch one of the same description, will not
 o great. These considerations, however, ag-
 the evils of the English system in a moral view,
 do not diminish its political bad consequences.
 y deserve inquiry to what causes the difference
 ice in maintaining the poor in each country is to
 bed. First, one cause may be the different
 of fixing the rates that obtain in England and
 and. The Justices of the Peace, who have the
 f fixing the poor-rates in England, have, in ge-
 o immediate interest in the business, or at least
 accidental and trifling one. ' The love of popu-
 o, by appearing liberal to the poor, is apt to
 them rather to favour the paupers, while the
 from which as proprietors they can scarcely be
 d to be intirely free) of repressing the conse-
 of the tenants, or of their representative, the
 * of the poor, naturally disposes them to lean

O

to

office of the overseer, who commonly is one of the
 is to manage the business of the poor in the dis-
 which he is appointed by the Justices of the Peace.
 the account of the poor's money, collects it, and
 es it to the paupers. He attends the Courts of the
 of the Peace, when any affair respecting the poor in
 ct comes before the court. His representation of
 is heard as well as that of the pauper, and the court
 ir judgment accordingly. The overseer may, if he
 insist upon the oath of the pauper being taken as
 uth of a particular fact which relates to the subject
 ie court.

to the same side. It is, therefore, the less to be wondered at, that they fix such high rates. In Scotland, the very reverse in these respects takes place, for the proprietors, by sharing the burden equally with the tenants, have an immediate interest in checking superfluous allowances to the poor, and their love of popularity as well as desire of repressing the consequence of the tenants are kept under by the same consideration. Second, The pauper in England considers himself as having a claim to the poor-rates as his birth-right, and no stigma accompanies the receiving of them. This destroys the spirit of independence, and relaxes industry and all vigorous exertion in order to acquire a competency, or to lay up any stock for future support in the event of their being unable to earn a subsistence by their own labour. This way of thinking is not so prevalent in Scotland. Indeed, till of late, it was considered in most places as implying a sort of disgrace for any person to receive money out of the poors fund. Many, even in very indigent circumstances, would rather have suffered the greatest extremity of want than have applied for this kind of relief; and when they were under the necessity of taking it, they were anxious to have it concealed. These ideas, however, are gradually wearing out in Scotland, especially in places which are contiguous to England, or where assessments for the support of the poor have been long and regularly levied *; and in proportion as
this

* The following observations on this subject, which are taken from the agricultural report of Roxburghshire, written by

his change has taken place in the sentiments of the poor, the poor rates have increased. Third, Good eat-

O 2

ing

the Rev. Dr Douglas of Galashiels, are highly worthy of the attention of the public, and especially of the landed interest of Scotland:

“ The introduction of poor rates, though attended with several advantages, is nevertheless to be regretted. It was formerly the fashion for people of all ranks to attend public worship, and to give liberally to the poor. The weekly collections were committed to the care of the kirk-session, a set of grave and active men, who, without any emolument, industriously sought out and relieved the modest objects of charity. By the prudence and frugality of their management, the wants of the needy were supplied, and a small fund was amassed in many parishes to be lent on interest until a time of extraordinary scarcity should arrive. These men still continue to act with the same disinterestedness and attention, but the absence of some proprietors from the country, the dissipation of public worship by others, the scanty contributions of those who attend, because of their being subjected to an assessment, and the natural effect of this general conduct to contract the public bounty of the truly charitable, together with the practice in several places of demanding one half of the trifle that is collected to augment the parochial funds, leave very little in their power to manage or bestow. From this change two serious evils arise. One of them is that the poor no longer receive supply with backwardness and gratitude as charity from the administrators of public bounty, but claim it boldly as their legal right, and expectation of it relax their diligence and oeconomy: And the other is, that the numerous class of seryants and day-labourers

ing is more common among the poor in England than in Scotland. They are therefore more apt to spend what is earned in good health ; and thus savings are not laid up, on which account they become sooner a burden

bourers, many of whom are in easy circumstances, cease to distribute their mites, from an idea that any little thing which they could spare would not serve the poor, but go into the pockets of the landholders and their tenants. Yet, in the present state of society, when religion is in so little request among the higher ranks, and they who still respect its ordinances, are divided into so many sects, the poor-rates have the advantage of subjecting all men equally, according to their possessions, to the necessary burden of supporting the indigent. If there be an alarming prospect of this burden becoming annually heavier, let the rich and the great reflect, that the best preventive is their regularly attending the national church, and encouraging others by their example to enlarge the weekly collections. Such a conduct might have the double effect of lowering the assessments, and of acquiring such a kindly influence over the poor, as would foster their natural shame to apply for charity, except in the most urgent necessity, and quicken their efforts to provide against it. A law might be made obliging sectaries to maintain their own power, or add their collections to the parish funds ; but it would be oppressive, as they pay their share of assessments in the different parishes to which they belong ; and it would serve no other purpose than affording a plausible pretence to the opulent among them to withhold their contributions, and putting a cruel constraint on the poor to adhere or return to the established church. Yet, while matters continue as they are at present, the number of poor, and the funds for their support, must yearly increase."

burden to the public. Fourth, The poor in England are perhaps less religious than those in Scotland. Hence, avarice will stimulate them to the acquisition of the largest possible allowance, even when it is not needed; and in proportion to their want of religion, conscience will be the less apt to prevent them from resorting to very base means, perhaps even to falsehood and perjury if found necessary to carry their point.

Reasoning theoretically, one might be led to infer, that the English mode of fixing the poor-rates is the best that can be devised. The two parties interested, the pauper on the one hand, and the overseer of the poor for the parish or district on the other, have a right to be heard respectively before a court of justices of the Peace, who have little or no immediate interest on either side, and therefore may be supposed impartial judges. But inferences deduced from theory are of no avail, when opposed by conclusions drawn from experience and the observation of facts. The sum of money raised for the maintenance of the poor in England, is far greater in proportion than that which is raised for the same purpose in Scotland, and yet the poor are not left to perish by want in Scotland any more than in England. Placing the paupers, by high poor rates, in a state comparatively affluent, and in some measure desirable, is holding out a bounty to falsehood and perjury, and giving a premium to idleness. People may be allowed to give voluntarily as much as they please to the poor, but they ought not to be compelled by law to give more than is absolutely necessary for their support. This will never be ef-

fectured in England unless the English poor laws are assimilated to the Scotch, or unless the administration of them is conducted in a very different manner from what it is at present.

Box clubs, or friendly societies.—These were never established here in any great number, and for sometime past they have been much on the decline. This may be owing to diverting the society funds from their original destination, to the purpose of hiring substitutes for the militia, to the successive contributions of money necessary for their support, and to the remote prospect of deriving any advantage from them.

In the parish of Bathgate, however, a sum of money is raised by friendly societies which is applied to support the indigent males of the parish, and is found adequate to the purpose. This shews that under proper regulations, and an upright management, friendly societies might prove very beneficial.

A very distinct communication from Mr James Thornton schoolmaster of Bathgate, concerning the state of the poor in that parish, and some other particulars, will be found in the Appendix No. 7. and a similar communication from the Rev. Mr Ritchie of Kirkliston, No. 8.

SECTION XI.—POPULATION.

Answers made by the schoolmasters of the county of Linlithgow to the 1st, 2d, and 3d questions contained in the schedule to an act entitled an ‘ Act for taking an account of the population of Great Britain, and of the increase and diminution thereof.’—The following account was taken in the year 1801 :

Ques-

Parish.	CITY OF WINNIPEG, 1885.				Persons chiefly employed in			Persons chiefly employed in trade, manufactures, or handicraft.	All other persons not included in the two preceding columns.
	Inhabited.	By how many families occupied.	Uninhabited.	Males.	Females.	Total of males and females.	Persons chiefly employed in agriculture.		
Linlithgow	457	714	32	1680	1914	3594	1320	1722	552
Borrowstownness	330	630	26	1210	1580	2790	180	256	2354
Carriden	217	364	15	625	868	1493	93	197	1203
Abercorn	182	182	2	399	415	814	133	48	633
Queensferry	77	112	—	186	268	454	9	91	354
Dalmeny	142	188	4	351	414	765	143	49	573
Kirkliston	191	230	—	556	630	1186	808	247	131
Ecclesmachan	57	57	4	161	142	303	70	14	219
Uphall	123	123	—	381	405	786	73	26	687
Livingston	124	140	20	248	303	551	63	44	444
Whitburn	318	330	12	687	850	1537	590	346	601
Bathgate	362½	529	15½	1158	1355	2513	377	346	1790
Torphichen	216	238	6	483	545	1028	286	443	299
Total,	2796½	3837	156½	8125	9689	17,814	4145	3829	9840

Extracted from the books of the Peace by JOHN BORD, Clk.

216 TABLE of the Annual number of Marriages, Birth, and Deaths

Parishes.	Marriages.	Births.	Deaths.	* It may be proper to mention that this table cannot be wholly depended upon for accuracy. It contains the average number of marriages, births, and deaths for some years past, and agrees with the books kept in the respective parishes, but the different particulars are not always fully entered in these books. The table of population may be depended on as correct nearly so, in most instances for the year 1801, in which the enumeration was made: But supposing the population of the county to have increased in the same ratio since the year 1755 that it did from 1755 to 1801 the whole population at present will be upwards of 100 more than is stated in the table, perhaps the increase has been still greater.
Abercorn -		22 $\frac{1}{10}$		
Bathgate -	21 $\frac{1}{2}$	64 $\frac{2}{10}$	44 $\frac{1}{2}$	
Borrowstounness	22	71	53	
Carriden -	—	—	—	
Dalmeny	6	15	8	
Ecclesmachan	2	6	3	
Kirkliston	12	40	16	
Linlithgow	30	96	58	
Livingston	—	20	10	
Queensferry	3 $\frac{1}{2}$	17 $\frac{3}{10}$	15 $\frac{2}{10}$	
Torphichen	11	22	11	
Uphall	3	23	18	
Whitburn -	14	22	18	

Table of the increase of Population from 1755 to 1801.

Parishes.	Population in 1755.	Population in 1790—1798.	Population in 1801.	Increase from 1755 to 1790—1798.	Decrease from 1755 to 1790—1798.	Increase from 1790—1798 to 1801.	Decrease from 1790—1798 to 1801.
Abercorn -	1037	870	814	—	167	—	56
Bathgate -	1594	2309	2513	715	—	204	—
Borrowstounness	2668	3178	2790	510	—	—	388
Carriden -	1164	1456	1493	286	—	43	—
Dalmeny -	1103	907	765	—	196	—	142
Ecclesmachan	351	213	303	—	136	88	—
Kirkliston	1461	1504	1186	43	—	—	318
Linlithgow -	3296	3221	3594	—	75	373	—
Livingston	598	420	551	—	178	131	—
Queensferry	451	505	454	54	—	—	51
Torphichen	1295	1069	1028	—	226	—	41
Uphall -	690	600	786	—	90	86	—
Whitburn -	1121	1322	1537	201	—	215	—
	16829	17570	17814	1809	1068	1140	996
Total increase from 1755 to 1790				1068		996	
		1798		741		1445	
						741	
Total increase from 1755 to 1801				—	—	885	
§ Increase from 1790—1798 to 1801.							

† Dr Meiklejohn minister of this parish is of opinion that since the year 1755 when the number was taken with great accuracy for the Statistical Account there has been no decrease, and that the numeration made in 1801 is less correct than the former.

“ Has population depended solely on food, or on the permission and facility of raising cottages ?—Is the district over or under peopled ? ”

There is not any want either of cottages or other kinds of houses in the county at large, nor any great difficulty in obtaining them when wanted. Considerably more food, also, besides the grain which the horses consume, is understood to be produced in the county, than is used by the inhabitants. It is therefore possible that the population might be greater than it is, if it depended solely either on food, or on the permission and facility of raising houses, or on both jointly. It is no doubt true that, without a suitable supply both of food and of houses, population can neither be kept up nor increased. The increase of population, however, does not depend on the mere existence of food and houses; but on the ability of the people to obtain them; that is, on the adequateness of their income. Now, the income of the great body of the people is only another name for their wages; and wages rise or fall according as the demand for labour is greater or less. The increase of population must therefore be considered as intimately connected with the state of the demand for labour. By the tables of the population of this county it appears that, in the course of the last 50 years, the number of its inhabitants has considerably increased. This probably has been owing to an increase of the quantity of food produced in the county, and to the demand for labour becoming greater. There is also reason to suppose that the population of the county would have increased still more, had it not been for the following circumstances:—In the time of harvest, when
agricultural

agricultural labourers are most wanted, many inhabitants of the towns turn out to assist in the cutting of the crop. Numbers of Highlanders, besides, come down into the county at this season of the year, who are hired for the same purpose. While this serves to prove that the population of the country part of the county is not sufficient of itself for the reaping of the crop, it shows, at the same time, that the whole labour of the county is carried on without difficulty, and that the defect of population is not felt.

To these causes, perhaps, it is owing that cottagers are not more numerous than they are, or that this species of population has not increased more than it has done. The circumstance of the surplus produce finding a ready market, by the great demand for supplying Edinburgh, Glasgow, and other towns, must likewise have a powerful effect in checking the increase of population within this county.

Healthiness of the District.—This is a very healthy county. There is no disease peculiar to it; nor are epidemical distempers frequent.

Food, and Mode of Living.—Among the lower or labouring classes of the people little, if any change, has taken place in the furniture of their houses; but in their dress the change has been very great, especially among the women servants, who are supposed to spend the whole of their wages or income on this article. The use of cloths made in the principal manufacturing towns is now almost universal among the labouring people. This change has been gradually brought about within

the

the last 30 or 40 years. Before that period, they were in use to wear cloth made at home, or of which the yarn was spun in their own houses. The yarn was made into cloth by country weavers, which was afterwards dressed by fullers and dyers of the same description.

The usual food of the common people is—oat meal porridge for breakfast; for dinner, broth made of barley prepared for the purpose and of vegetables, sometimes with butcher-meat, and sometimes without it; and for supper, potatoes, two-thirds of the year, and porridge the remaining third. Oat cakes are the common bread. At dinner some use bread made of pease and barley mixed. In harvest, wheat bread and beer are the common food for dinner and supper, but particularly for dinner.* The use of tea and of wheat bread has of late crept in among the lower classes, and is rather gaining ground. It is an unlucky practice. The new food is more expensive than the old, and is not more nourishing. It tends to prevent savings, and, in the end, to make the poor more numerous and burdensome to the public.

The manners of the common people are on the whole regular. They are not averse to the drinking of whiskey occasionally; though they are not, in general, given to intoxication. The young men seldom delay marrying after they have acquired as much money as is sufficient to purchase the necessary furniture for a house; and

* The quantity of bread is 16 ounces, and of beer a chopin.

and they sometimes marry even before they have acquired the requisite sum. They generally put their children to school, where they learn to read and write; and some of them learn likewise the common branches of arithmetic.

For some time past, the authority of parents, of the lower class, over their children has been rather on the decline. This is not a favourable symptom of the increase, or even of the stability of good morals. It probably has its origin in a general laxity of the religious principles of the people; and there is but too much reason to fear that, in the end, it may be productive of hurtful consequences to society.

Some account of the character and mode of living of the farmers was formerly given in Chapter iv. Section 2.

CHAP.

CHAPTER XVII.

OBSTACLES TO IMPROVEMENT.

SECTION I.—RELATIVE TO CAPITAL.

THE want of capital is a clog to every improvement in agriculture. Without the command of money, it would be folly in a farmer to attempt expensive improvements, or those on a large scale. The returns are often distant, and always more or less uncertain. The want of capital, however, is not materially felt in this county, except among some of the tenants of very small farms.

SECTION

falls on the tenant. In so far therefore as the farmer, especially in the case last mentioned, pays more than an equal proportion with other classes, the additional sum must be viewed as an additional annual rent paid by him, which he could not foresee nor provide against, at the time when he made his offer for his farm.

In its general principle or spirit, the property tax is a tax on real income ; but the mode in which the farmers are assessed is without any regard to real income, and altogether imaginary. The half of the rent payable to the proprietor for the first seven years of the lease, and besides this, after the expiration of the first seven years, the amount and half of the amount of the additional rent at which the farm, in the judgment of the commissioners, or surveyors employed by them, might be let at rack rent in any year of the lease during its future currency, are assumed as the farmer's income in these years respectively. Supposing the annual rent of a farm to be L.400, the farmer's income is assumed to be the half of this sum, or L.200, per annum, for the first seven years of the lease : For this he pays L.20 of tax. If the commissioners, at the end of the seven years, estimate the rent at L.600 instead of L.400, the farmer pays for the additional L.200 the proprietor's tax, or L.20 per annum : besides this, he pays for the half of the additional rent, viz. L.100, the farmer's tax, or L.10 per annum : At the same time, he continues to be charged for the original rent ; so that, on the whole, he pays the tax of an income of L.400 after the expiration of the first seven years of the lease. It is also competent for the commissioners to raise the rent every year during the currency of the lease by a new valuation ;

valuation; and the farmer must pay the tax in the proportion above stated. It is evident that this rule is wholly gratuitous; and it is a mere chance if in any case a farmer's income corresponds to it. From the nature of the farmer's business, his income must be very fluctuating:—In some years, he may have no income at all; and in others, he may be a loser. To tax him in proportion to his rent is therefore altogether unreasonable. It is obvious that the higher the rent is, *cæteris paribus*, the income of the farmer will be the less.

From this it may be justly inferred, if the rent is in any form to be taken as the criterion of the income of farmers, that they should be assessed in the inverse ratio of the rents; at least where the size of the farms, the quality of the soil, and other circumstances, are similar. Suppose two farms, adjacent to one another, each containing 100 acres of land of equal value, the rent in the one case being L.200, and in the other L.300, it is apparent that the income of the tenant of the lowest rented farm must be just L.100 greater than that of the tenant of the highest rented farm, provided both the farms are equally well managed. It is therefore plain that, in equity, the farmers ought to be assessed in the inverse ratio of their rents: but by the law, as it stands at present, he, whose real income is less than that of the other by L.100, pays the tax of an imaginary income greater by L.100 than the estimated income of his more fortunate neighbour.

It may be asked, however, Why are farmers not allowed to make a return of their income as well as any other class in the community? This treatment sup-

poses, either that they are so ignorant as not to be able to make a proper return of their income, or that their veracity cannot be trusted, or that their business does not admit of a regular return being made.

First,—To say that the farmers are so ignorant as not to be able to make the proper return of their income, is inconsistent with their known character. The body of the farmers of Scotland are comparatively not inferior in knowledge to any other class in the community.

Second,—With respect to the degree of confidence proper to be reposed in the veracity of farmers, it may be observed, that they are as well entitled to be believed as any other description of men in the country. In former times, the agricultural part of the population of the country were usually accounted not the least virtuous members of society: and there seems to be no reason why they should not be accounted so still.

Third,—The occupation of a farmer admits of a regular return of income being made, as readily as that of persons in other kinds of trade. A farmer, like other men in business, has expences and profits; and he may easily ascertain them. He knows what stock he has, what number of cattle and sheep, what quantity of grain is produced on his farm, and what the price is at which he sells these articles. He knows the number of his servants, and the amount of the wages which he pays them;—the number of his own family, and the expence of their maintenance;—his cloth-merchant's, taylor's, baker's,

baker's, and butcher's accounts : or if any of the necessaries of life, which are furnished on the farm, are used, he knows the price at which these may be sold.

If, indeed, it were true, that the farmers business does not admit of a regular return of income being made, it must be granted that, in order to levy the tax, some rule of assessment of an arbitrary kind must be employed. But then care ought to be taken that the farmer shall not bear more than his equal portion of the burden. If the rate is found too high in one year, it ought to be lowered in another. That the present assessment of farmers is too high, their complaining of it is the best proof. Were it below the equal proportion or less than ten per cent. on their real income, they would not complain ; because it would be for their interest to keep quiet. Examination might bring the truth to light.

There is, however, no occasion for having recourse to any arbitrary rule of assessing the farmer. There is no good ground for assuming that the occupation of the farmer does not admit of a proper return of income being made, as well as that of others ; and yet there is reason to suspect that the legislature may have been influenced by this consideration, for it cannot be supposed to have been their belief that any hypothetical proportion between the rent and income of farmers was in any measure to be depended on for accuracy. It is a characteristic of the British constitution to protect all the subjects alike, to make all bear an equal proportion of the necessary burdens of the state, and to impose taxes according to the principles of equity and justice.

SECTION VIII.—ENEMIES.

Red or wire worm.—The wire worm preys upon the roots of the young plants, during the spring season, and is very destructive to them. The same may be said of the great grub-worm. The best method of destroying these insects is by a complete summer fallow in the second year after breaking up from grass; which, besides killing the insects or preventing their increase, is the most proper and advantageous course for such lands. Crows or other birds are also found useful in destroying the grub and wire worm.

Slug.—Slugs, which when numerous are hurtful, may in a great measure be destroyed by crushing them with the roller after sunset. In gardens where this cannot be done, if ducks are allowed to range, they will eat the slugs greedily.

Rats and mice.—Rats and mice are very destructive vermin. The former, when they cannot command a sufficiency of food, may be extirpated by giving them poison, and persevering for sometime in its use. Mr Ross, at Edinburgh, has been very successful in destroying rats by a species of poison in the form of cakes or pills. Mice are more easily kept under by cats or by the use of traps.

Moles.—Moles are hurtful both to corn and grass lands, and farmers have paid less attention to the extirpation

pation of them than its importance demands. In order to insure this, it might be adviseable for landlords universally to bind each of their tenants to employ a mole-catcher to be paid at a rate agreed on per acre over the whole farm. Were this plan generally adopted, it would probably prevent the moles from increasing so as to do any material injury.

Sparrows.—Sparrows commit considerable depredation on grain in the vicinity of thatched houses or hedges. Their number may be easily lessened by shooting them, or by catching them in winter in their seats at night, or by destroying their eggs or young in the nest.

Pigeons.—Where pigeon-houses are numerous, the pigeons are a great nuisance to the farmer in seed time, and about the time at which the grain ripens. They ought to be frequently fed at home, in order to prevent their doing damage abroad. This would also save many of them from being shot.

Crows.—When crows are numerous, they are very destructive to newly sown grain, and to wheat when just springing. They pull up the blade to get at the pulp of the root, and also to get at small worms, which are not unfrequently found in plenty at that time in newly sown rich lands. Crows are very useful in the destruction of noxious insects. If they are thought too plentiful in a district, the increase of them may easily be prevented by demolishing their nests in the hatching season.

CHAPTER XVIII.

MISCELLANEOUS ARTICLES.

SECTION I.—AGRICULTURAL SOCIETIES.

An agricultural society of gentlemen and farmers, to the amount nearly of a hundred members, was formed about three years ago, for the purpose of communicating useful hints for improvement, and granting premiums for the encouragement of it, in regard to the breed of stock, implements of husbandry, and every other useful branch of agriculture. The society could not perhaps apply a portion of their fund or subscriptions to a better purpose than to the establishment of a library of the kind formerly mentioned*.

About the year 1773, a number of farmers and others in the county formed a society for the purpose of prosecuting

* Chap. 17. Sect. 2.

cuting thieves, robbers, and sturdy beggars. Each of the members pays an annual contribution, which has now accumulated to a considerable fund, although they have of late been obliged to have frequent recourse to drawing upon for the prosecution of offenders.

An institution of this kind is likely from its nature to be beneficial.

A society or body of men are less apt than a single person to be moved with a mistaken clemency to the offender, or to be deterred from prosecuting him by the apprehension of trouble, or by the dread of expence. Notwithstanding these circumstances, the number of offenders has rather increased of late years : But without such a society their number might perhaps have been still greater.

Copies of the regulations of both these societies will be found in the Appendix, No. 9. and 10.

Ministers Stipends.

<i>Parishes.</i>	<i>Converted.*</i> L. s. d.	<i>Particulars of which they consist.</i>
Abercorn	251 1 5½	Oatmeal, 96 bolls 2 pecks 2 lip. ; barley, 90 bolls 1 lip. wheat, 4 bolls 2 pecks 3 lip. and L.50 Sterling. For communion elements there is an allowance of L.8. 6s. 8d.
Bathgate	120 0 0	
Borrowstounness	501 12 8	A farm let at L.300 money; 32 bolls barley, 32 bolls meal, at current fair prices. Deduct 800 merks of the above as old stipend paid out of do. farm. The rest of old stipend is 6 chalders victual, greatest part oats and barley.
Carriden	197 5 4	Oatmeal, 16 bolls ; barley, 16 bolls ; L. 33. 6s. 8d. Sterling ; and L.5 for communion elements.

Ministers

* In this column the allowances for communion elements are not included ; because they do not properly belong to the ministers. The rent of glebes, manses, and gardens, are also left out ; no return having been made of these particulars. On an average, the rents of glebes, manses, and gardens may be estimated, for each minister, to amount to from L.20 to L.30 per annum. The meal and grain are converted according to the average of the fairs of the county from the year 1799 to 1808, both inclusive.

Ministers Stipends continued.

<i>Parishes.</i>	<i>Converted. L. s. d.</i>	<i>Particulars of which they consist.</i>
Dalmeny	243 16 11½	Oatmeal, 41 bolls; oats, 16 bolls; barley, 82 bolls; wheat, 5 bolls; L.57. 11s. 0½d Sterling.
Ecclesmachan	256 10 0	Oatmeal, 6 chalders; barley, 3 chalders; L.75 Sterl. and for commun. elem. L.5 St.
Kirkliston	183 13 4½	Oatmeal, 62 bolls; barley, 35 bolls; L.5. 11s. 7d. feu duty, a gift from the crown; L.55. 11s. 7d. Sterl.; and for commun. elements, L.5.
Lanlithgow	290 17 1½	Oatmeal, 101 bolls; barley, 75 bolls; oats, 16 bolls; L.50 Sterl.; and for communion elements L.8. 6s. 8d.
Livingston	228 19 4½	74. bolls meal; 37½ bolls barley; money, L.83. 6s. 8d.; communion elements, L.8. 6s. 8d.
Queensferry	129 7 8	Assessment of 10 per cent. on rent of houses in the burgh, L.44. 11s. 1d.; rent of seats in the church, L.19. 7s. 8d.; grant by K. Will. out of the Bishop's rents of Edinr. and Dunkeld, L.22. 4s. 3d.; grant by his present Maj. L.21.; rent of mortified money, L.15. 2s. 4d.; rent of 2 acres of land, and grass of the church-yard, L.5. 5s.; payable by the Town L.1. 17s. 4d.

Ministers

Ministers Stipends continued.

* Parishes.	Converted.			Particulars of which they consist.
	L.	s.	d.	
Torphichen	254	18	4	Oatmeal, 5 chalders; barley, 5 chalders; L.50 Sterling; and for commun. elements L.8. 6s. 8d.
Uphall.	219	17	0½	Oatmeal, 110 bolls; barley, 45 bolls; wheat, 1 boll 2 firl. 1 peck; and L.22. St.
Whitburn	174	4	4	48 bolls meal; L.16. 13s. 4d. in money; feu of a farm of L.100 Sterling; and L.5 for communion elements.

Schools.

Parishes.	* No. of Scholars	Schoolmasters Emoluments.
Abercorn	100	The annual income of the parochial schoolmaster, on an average, is about L.70 Sterl. There is also a school for girls, attended by about 30 children: the income of the mistress may be about L.25 per ann. Another school is taught by a woman in the west end of the parish, and may be attended by about 20 children: the income of the mistress is inconsiderable.

Schools

* The number of scholars cannot be quite accurate, as in some of the parishes there are private schools, of which, in most instances, no return was made. The account of the schoolmasters emoluments is evidently imperfect: but is correct as far as is given.

Schools continued.

<i>Parishes.</i>	<i>No. of Scholars.</i>	<i>Schoolmasters Emoluments.</i>
Bathgate	90	The salary is the maximum allowed by law: The school fees may amount to L.40 Sterling.
Borrowstounness	100	The salary is the maximum allowed by law: 4s. per quarter for scholars, and the session-clerk's fees.
Carriden	40	About L.50 per annum, including a salary of L.22. 2s. 2d.
Dalmeny	75	L.64. 14s. 5d Sterling, including salary, rent of mortified money, and school fees.
Ecclesmachan	50	The salary is the maximum allowed by law.
Kirkliston	160*	A salary of 400 merks, and school wages, for the parochial schoolmaster. The school fees fixed by the heritors are, for reading 2s. per quarter, reading and writing 2s. 6d., arithmetic 3s., Latin 5s. 6d.
Linlithgow	350	A salary of L.58 Sterling, for the grammar and English schoolmasters.
Livingston		
Queensferry	50	A salary of L. 22, and school fees, 5s. per quarter for Latin, and 2s. 6d. for common reading & writ.

Schools.

* The scholars both at the parochial and private schools are included. The same observation is applicable to **Abercorn.**

Schools continued.

<i>Parishes.</i>	<i>No. of Scholars.</i>	<i>Schoolmasters Emoluments.</i>
Torpichen	50	A salary of 400 merks and a k of meal. Another schoolmas at Blackrig receives a salary 100 merks.
Uphall	65	The salary is the maximum lowed by law.
Whitburn	50	The whole emoluments amon to L.58 Sterling yearly.

Statistics

Statistical Table of the Produce of the County.

	1	2	3	4
	Acres Scotch.	Produce per acre.	Total annual pro- duce converted into money.	Numb. of horses & other ani- mals, &c.
County	57008	L. s. d.	L. s. d.	
Wheat	4000		5000 0 0	
Oats	1038			
Barley & gardens	1000		8000 0 0	
Peas	1008		25 0 0	
Turnips	200			
Other	27877			
Wheat	4170	6 13 4	27800 0 0	
Barley	4170			
Peas	500	6 0 0	3000 0 0	
Other	40020	or 50 bolls.	8000 0 0	
Green crops	100	6 0 0	600 0 0	
Wheat	1500	6 1/2 } bolls. }	15908 7 9 1/2	
Barley	1500	6 1/2 0 0	11571 17 6	
Peas & pease	750	5 0 0	2739 9 2 1/4	
Other	8795	6 1/2 0 0	51496 0 6	
Wheat			11888 0 0	2495
Barley			25070 0 0	1486
Peas			3089 1 0	7014
Other			1440 0 0	3633
Wheat				720
Barley			17616 13 4	Tons
Peas				53000
Other			22400 0 0	Bushels
Wheat			35000 0 0	48000
Barley			6000 0 0	
Peas			1000 0 0	
Other			257644 9 3 1/2	

In

In column 3. of the preceding Table, the sum of L.5000 is stated as the value of the annual produce of the woods. Probably, however, the plantations might yield three times this produce were the proprietors less solicitous to preserve their old trees for the sake of ornament.

The clover is converted at the rate of 160 stones of hay per acre, at 10d. per stone.

The grain is converted at the average of the *fiars* for the last ten years, viz. from 1799 to 1808, both inclusive. The seed is excluded, being equal in value to L.14059. 19s. 0½d.*

The produce of each cow is supposed worth L.8. The value of each of the cattle is supposed to be L.9; and their prime cost, which is estimated at L.4 each, is subtracted, because it cannot be viewed as annual produce.

The sale price of each sheep is supposed to be L.1. 15s. ; the prime cost 18s., which is subtracted from the sale price, as in the case of cattle.

The sale price of swine is supposed to be L.2. 10s. from which 10s., the prime cost, are subtracted.

In column 4. two thousand more cattle are set down than are converted in column 3. because there may be about two thousand more generally maintained in the county than are sold within the year, which therefore are unproductive for that year.

The

* Wheat, L.2077. 16s. 1¾d. — Barley, L.1509. 7s. 6d. — Oats, L.9363. 0s. 2½d — Pease and beans, L.1109. 15s. 2½d.

The average price of Borrowstounness and Grange coals, which amount to 38000 tons annually, is taken at 7s. 2d. per ton. The average price of the other coals in the county is taken at 5s. 4d. per ton.

The salt is calculated at 9s. 4d. per bushel.

As the total produce of the county is stated at L.257644, and the population at 17814, the proportion of produce for each individual, if equally divided, would be about L.14. 9s.

The real rent of the county being somewhat above L.64000, amounts to about a fourth part of the computed produce.

It is proper to observe that, in constructing the foregoing Table of the produce of the county, the author has not proceeded upon a return of the different particulars procured from the several parishes. This he found it was impossible to obtain. He has therefore founded his calculations on probable data, assumed respecting of the particulars from partial information, which, however, in some instances, he has reason to believe is pretty correct, and from his own general knowledge of the state of the county respecting the rest.

APPENDIX.

APPENDIX.

No. I.

*Prices of Mason and Carpenter Work in building the
Farm-house at Stacks, A. D. 1806—1807.*

	L.	s.	d.
Rubble building, per rood reduced to two feet thick	7	7	0
Flues, per lineal foot	0	0	7
Hewn work, per square foot *	0	0	10
Brick partitions, per square yard	0	2	0
Joists and batten floors, per yard	0	7	6
Roof and sarking, without covering, per yard	0	5	8
Windows glazed and hung, per foot	0	2	9
Slating, per rood of 36 square yards	7	7	0

Q

Prices

* Price of stones at the quarry intended for hewn work
from 2½d. to 4d per foot. Price of stones at the quarry in-
tended for rubble building, 8d. and 9d. per cart.

*Prices of Mason and Carpenter Work in building the
Farm-offices at Stacks, A. D. 1806—1807.*

	L.	s.	d.
Ruble building, per rood of 36 square yards	5	5	0
Hewn work, per square foot	-	0	0 9
Roofing with tile covering, per square yard	0	4	7
Joisting and flooring of granary, per square yard	-	-	0 6 10
Plain deal doors, per square yard	-	0	4 6
Memel logs, per cubic foot	-	-	0 2 6

Description, Figure 1.

A. B. B. represents a shaft, curved in the same degree as the outside or walls of the shed, and fixed by the middle upon a beam of wood, E. E. which passes through the spindle F. A. B. represents an inner shaft placed as near to the other as just to leave room for the horses to work; the cross C. stays to keep the shaft firm; D. D. additional stays up to the outer wheel; G. G. from the ends of the inner shaft. The height of the shafts is about three feet four inches from the horse course.

A. A. horizontal pullies fixed upon the shafts (about five feet from the beam) by an iron steeple, (this may be secured by screws under the shaft), one leg of which serves

serves for the axle, and strong enough to endure the draught of both the horses. B. B. B. smaller pullies to conduct the rope, (in these one leg of the steeple must be on the outside.)

In Figure 2. N represents a trace of 17 feet in length, with a few iron links at each end, by one of which it is hooked on the near hame of the leading horse, then passing on the outside of the guiding pullies B. B. (within the outer leg of the steeple), and turning round the pulley A, is hooked to the near hame of the horse behind. Another trace is hooked in the same manner to the far hame of the leading horse, and conducted by the *inside* of the guiding pulley B. round the *outside* of A. and hooked to the far hame of the horse behind.

The advantages supposed to be derived from this mode of yoking the horses are,—1. That each horse has his own share of the draught as much as when yoked abreast with swing trees, while the utmost possible length of lever is preserved.

2. It has been found in practice, that the horses draw more steadily and uniformly, so as to approach nearly to the motion of a water wheel, which must be greatly in favour of the machinery.

Some rash unsteady horses, that had been laid aside as improper for the machine, have been tried, and found to work pleasantly in this way; and it is easier for the horses shoulders.

It is recommended to put the quickest horse of the pair to lead, as the horse behind soon learns to keep his head up to the beam, whereas if the leading horse slacks, the other is prevented from drawing. M. H.

No. V.

*Fiars of the Shire of Linlithgow. Crops 1654 and 1808 and intervening years.**

N. B. The prices from the beginning to the year 1771 are in Scots money; from 1772 downwards they are in Sterling money.

	Crop 1654,			Crop 1655,			Crop 1657,			Crop 1658,		
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
The boll of wheat	4	13	4	5	13	4	6	6	8	11	0	0
bear	4	0	0	5	16	8	4	13	4	6	13	4
meal	2	13	4	4	0	0	4	13	4	6	0	0
pease	2	0	0	5	16	8	3	6	8	6	0	0
oats	3	6	8	3	6	8	3	13	4	5	3	4
malt	4	13	4	7	0	0	5	6	8	7	0	0

* In this county the fiars are the average prices of grain from the first of November to Candlemas. The fixing of these average prices is termed striking the fiars. The Sheriff of the county appoints the day on which they are to be struck, usually the last Friday of February, or the first or second Friday of March, as it may happen. In the course of the week immediately preceding, he summons from the different parishes of the county twelve heritors, six maltsters and brewers, and eighty-four witnesses, consisting generally of farmers, who are the sellers, and of a few traders or dealers, who are the buyers, to meet in the town-house of Linlithgow at twelve o'clock on the day appointed. Out of those who are summoned and present at the meeting, the Sheriff selects fifteen, who, after taking an oath, administered by the Sheriff, which binds

	Crop 1660,			Crop 1661,			Crop 1662,			Crop 1663,		
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
boll of wheat	10	0	0	10	0	0	9	6	8	8	10	0
bear	6	3	4	7	13	4	6	13	4	5	3	4
meal	6	16	8	6	13	4	5	0	0	4	13	4
oats	5	13	4	6	0	0	4	6	8	4	0	0
malt	7	0	0	8	0	0	6	13	4	5	16	8
Pease	6	6	8	6	0	0	3	13	4	3	6	8
	Q 3						Crop					

s them to act according to conscience and their best
ment, are constituted as a jury. The jury usually con-
of eight heritors and of seven farmers and traders, the
ers commonly being a majority of the seven. The jury-
elect one of their number to be chancellor, who pre-
in the jury. Out of the witnesses who are not chosen
rymen, the jury select what individuals they think pro-
to whom an oath is also administered by the Sheriff,
ng them to tell the truth according to their knowledge
est judgment; and to these witnesses the jury put such
ions, concerning the prices as they judge necessary to
s them to form a correct opinion. From the evidence
ed in this manner, the jury strike the fiars, or fix
verage prices: If there are any differences of opinion,
estion is determined by a plurality of votes: If there
equality, the chancellor decides by his casting vote. It
er to remark that the barley and oats are divided into
ifferent sorts according to their qualities, of each of
the average prices are fixed. The wheat, pease, meal,
alt are not divided.

this mode of striking the fiars, the average price of
from the first of November to Candlemas is ascertain-
h tolerable exactness; but as the prices usually are
at that season than during the rest of the year, the av-
e prices for the whole year must be considerably higher
the fiars.

	Crop 1664,			Crop 1665,			Crop 1666,			Crop 1667,		
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
The boll of wheat	6	6	8	7	0	0	5	6	8	5	6	8
bear	3	13	4	4	0	0	4	6	8	4	13	4
meal	3	6	8	4	0	0	4	8	0	4	0	0
oats	2	13	4	3	6	8	3	13	4	3	6	8
malt	4	0	0	4	13	4	4	13	4	5	6	8
pease	2	10	0	4	6	8	3	16	8	3	13	4

	1668,			1669,			1670,			1671,		
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
The boll of wheat	5	10	0	6	0	0	6	3	4	9	6	8
bear	4	13	4	4	13	4	4	16	8	5	6	8
meal	4	0	0	3	13	4	5	6	8	5	16	8
oats	3	6	8	3	3	4	4	6	8	5	0	0
malt	5	6	8	5	3	4	5	6	8	5	16	8
pease	3	0	0	3	0	0	4	0	0	5	16	8

	1672,			1673,			1674,			1675,		
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
The boll of wheat	6	13	4	6	0	0	11	0	0	10	0	0
bear	4	13	4	4	13	4	8	10	0	10	0	0
meal	4	10	0	4	17	0	8	10	0	7	6	8
oats	4	0	0	4	6	8	6	13	4	6	13	4
malt	5	3	4	5	0	0	9	0	0	10	13	4
pease	4	10	0	4	13	4	8	10	0	8	0	0

	1676,			1677,			1678,			1679,		
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
The boll of wheat	6	0	0	6	0	0	6	6	8	8	13	4
bear	4	0	0	4	3	4	3	15	0	4	13	4
meal	3	6	8	3	6	8	3	0	0	4	16	8
oats	2	16	0	3	0	0	2	13	4	4	0	0
malt	4	6	8				4	2	8	5	0	0
pease	3	3	4	3	0	0				5	0	0

	1680,			1681,			1682,			1683,		
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
The boll of wheat	6	0	0	6	0	0	6	0	0	6	6	8
bear	4	3	4	4	13	4	7	0	0	4	10	0
meal	4	10	0	5	6	8	5	6	8	4	0	0
oats	4	0	0	5	8	0	4	1	0	3	13	4
malt										5	0	0
pease	2	13	4	5	0	0	5	13	4	3	13	4

Crop

	Crop 1684,			Crop 1685,			Crop 1686,			Crop 1687,		
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
The boll of wheat	6	6	8	6	0	0	5	13	4	5	6	8
bear	4	6	8	4	6	8	5	13	4	5	0	0
meal	4	10	0	4	6	8	4	13	4	5	0	0
oats	3	13	4	3	6	8	4	0	0	3	13	4
malt				4	12	0	6	0	0			
pease	4	0	0	3	0	0	5	12	0	3	3	4

	1688,			1689,			1690,			1691,		
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
The boll of wheat	5	0	0	7	0	0	8	0	0	6	13	4
bear	5	0	0	5	0	0	7	6	8	4	13	4
meal	5	0	0	5	13	4	6	6	8	4	0	0
oats	4	10	0	5	0	0	5	13	4	3	10	0
malt	5	6	8	5	6	8	7	13	4	5	6	8
pease	5	6	8	4	10	0	6	13	4	3	13	4

	1692,			1693,			1694,			1695,		
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
The boll of wheat	6	10	0	8	0	0	8	0	0	8	10	0
bear	4	13	4	5	0	0	5	3	4	7	6	8
meal	4	0	0	4	10	0	5	6	8	8	0	0
oats	3	10	0	4	0	0	4	13	4	6	6	8
malt	5	0	0	5	6	8	5	6	8	7	10	0
pease	4	0	0	4	0	0	5	0	0	7	10	0

	1696,			1697,			1698,			1699,		
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
The boll of wheat	11	10	0	9	0	0	15	0	0	13	6	8
bear	11	0	0	7	0	0	10	13	4	11	0	0
meal	9	0	0	6	0	0	12	0	0	9	0	0
oats	8	0	0	5	0	0	10	0	0	6	13	4
malt	-	-	-	-	-	-	11	0	0	-	-	-
pease	8	0	0	5	0	0	10	0	0	9	0	0

Tartravin and parish besouth, their oats	-	-	-	-	-	-	6	13	4	-	-	-
--	---	---	---	---	---	---	---	----	---	---	---	---

	Crop 1700,		
	£.	s.	d.
The boll of wheat	8	16	0
bea:	7	0	0
meal	5	12	0
oats	4	13	4
malt	7	13	4
pease	4	0	0

	Crop 1701,			Crop 1702,			Crop 1703,			Crop 1704,		
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
The boll of wheat	6	6	8	6	13	4	8	0	0	7	2	0
Best daill land bear	5	10	0	6	0	0	6	0	0	6	0	0
Rough muirland bear	4	16	8	5	0	0	5	6	8	5	10	0
Meal	4	16	8	6	13	4	5	12	0	5	6	0
Best great oats	4	0	0	5	6	8	5	0	0	4	16	8
White and small oats	3	6	8	5	0	0	4	0	0	4	3	4
Malt	5	6	8	6	0	0	6	0	0	6	0	0
Pease	3	10	0	5	0	0	4	0	0	4	13	4

	1705,			1706,			1707,			1708,		
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
The boll of wheat	6	0	0	4	6	8	7	0	0	7	13	4
Best daill land bear	5	6	8	4	0	0	4	6	8	6	10	0
Rough muirland bear	5	0	0	3	10	0	4	0	0	6	3	4
Meal	4	10	0	3	6	8	3	10	0	5	10	0
Best great oats	4	0	0	2	13	4	3	0	0	5	0	0
White and small oats	3	6	8	2	4	0	4	5	0	6	13	4
Pease	4	0	0	2	0	0	3	6	8	5	6	8
Malt	5	10	0	4	0	0	4	13	4	6	10	0

	1709,			1710,			1711,			1712,		
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
The boll of wheat	12	0	0	8	15	0	7	3	4	8	1	0
Best daill land bear	7	15	0	7	16	8	5	15	0	5	16	0
Rough muirland bear	7	0	0	7	0	0	5	3	4	5	6	0
Best great oats	6	15	0	6	5	0	4	6	8	4	6	8
White or small oats	6	0	0	5	6	8	3	18	4	3	10	0
Oatmeal	8	0	0	7	4	0	5	0	0	5	0	0
Pease	7	0	0	6	6	8	3	5	0	3	6	0
Malt	7	10	0	8	0	0	5	13	4	5	13	4

Crop

	Crop 1713,			Crop 1714,			Crop 1715,			Crop 1716,		
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
The boll of wheat	8	15	0	7	0	0	8	10	0	7	10	0
Best bear	5	6	8	7	10	0	6	13	4	5	0	0
Muirland bear	5	0	0	6	13	4	6	0	0	4	13	4
Best oats	4	6	8	5	0	0	5	10	0	4	5	0
Small oats	3	16	8	4	10	0	4	10	0	3	13	4
Oatmeal	5	6	8	6	0	0	6	0	0	5	0	0
Pease	6	13	4	6	0	0	5	10	0	3	0	0
Malt	5	13	4	7	6	8	6	10	0	5	6	8

	1717,			1718,			1719,			1720,		
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
The boll of wheat	7	0	0	7	5	0	7	6	8	6	13	4
Best bear	5	0	0	5	13	4	5	16	0	6	0	0
Muirland bear	4	10	0	5	5	0	5	6	8	5	13	4
Best oats	4	16	0	4	15	0	5	3	4	5	0	0
Small oats	4	0	0	4	6	8	4	13	4	4	10	0
Oatmeal	5	8	0	5	10	0	5	16	0	4	0	0
Pease	3	0	0	4	6	8	5	0	0	6	0	0
Malt	5	0	0	5	6	8	5	6	8	5	10	0

	1721,			1722,			1723,			1724,		
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
The boll of wheat	7	8	0	8	6	8	8	0	0	7	5	0
Best bear	5	15	0	6	10	0	7	10	0	5	8	0
Muirland bear	5	3	4	6	0	0	6	12	0	5	0	0
Best oats	4	10	0	6	0	0	5	16	0	4	0	0
Small oats	4	0	0	5	10	0	5	6	8	3	13	4
Oatmeal	5	6	8	6	10	0	6	6	8	4	16	0
Pease	4	8	0	7	0	0	6	0	0	3	12	0
Malt	5	13	4	6	6	8	7	0	0	5	6	8

	1725,			1726,			1727,			1728,		
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
The boll of wheat	10	0	0	8	5	0	8	13	4	9	0	0
Best bear	6	10	0	5	15	0	7	0	0	8	3	4
Muirland bear	5	13	4	5	1	8	6	0	0	7	12	0
Best oats	5	6	8	5	0	0	5	3	4	6	6	8
Small oats	4	13	4	4	10	0	4	15	0	5	16	8
Oatmeal	6	0	0	5	10	0	5	15	0	7	0	0
Pease	5	10	0	4	0	0	5	15	0	6	12	0
Malt	6	13	4	6	0	0	7	6	8	8	0	0

Crop

	Crop 1729,			Crop 1730,			Crop 1731,			Crop 1732,		
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
The boll of wheat	8	4	0	7	10	0	7	10	0	5	18	0
Best bear	6	0	0	5	4	0	5	0	0	4	17	0
Muirland bear	5	10	0	4	10	0	4	10	0	4	4	0
Great oats	5	4	0	4	10	0	4	10	0	3	18	0
Small oats	4	10	0	3	18	0	4	0	0	3	10	0
Oatmeal	5	16	0	5	0	0	4	12	0	4	11	0
Pease	4	0	0	3	6	8	3	10	0	3	4	0
Malt	6	10	0	6	0	0	5	13	4	5	5	6

	1733,			1734,			1735,			1736,		
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
The boll of wheat	6	16	6	8	16	0	8	11	0	8	5	6
Best bear	6	0	0	5	18	0	6	3	0	6	9	0
Muirland bear	5	4	0	5	10	0	5	17	0	5	19	0
Great oats	4	10	0	4	19	0	5	11	0	5	6	8
Small oats	4	0	0	4	11	0	5	3	0	4	14	6
Oatmeal	5	5	0	5	13	0	6	6	8	6	1	0
Pease	4	5	6	3	12	0	4	18	0	5	9	0
Malt	6	10	0	6	3	4	6	18	0	7	8	6

	1737,			1738,			1739,			1740,		
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
The boll of wheat	7	15	0	6	2	0	8	0	0	14	0	0
Best bear	6	11	0	6	0	0	7	2	0	10	10	0
Muirland bear	5	17	0	5	12	0	6	10	0	10	0	0
Great oats	5	4	0	4	0	0	5	4	0	8	10	0
Small oats	4	16	0	3	15	0	4	16	0	8	0	0
Oat meal	5	16	0	4	18	0	6	3	0	10	0	0
Pease	5	10	0	4	0	0	5	6	0	10	0	0
Malt	7	0	0	7	5	0	7	18	0	11	0	0

	1741,			1742,			1743,		
	£.	s.	d.	£.	s.	d.	£.	s.	d.
The boll of wheat	8	0	0	6	8	0	6	0	0
Best bear	6	5	0	6	5	0	5	6	8
Muirland bear	5	12	0	5	15	0	4	10	0
Great oats	5	8	0	4	0	0	3	16	6
Small oats	4	15	0	3	10	0	3	5	8
Oatmeal	6	0	0	4	10	0	4	5	0
Pease	5	15	0	4	0	0	3	5	4
Malt	7	5	0	5	12	0	5	12	6

Crop

	Crop 1744,			Crop 1745,			Crop 1746,			Crop 1747,		
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
The boll of wheat	6	10	0	9	0	0	8	8	0	7	12	0
Oatmeal	6	0	0	8	0	0	5	18	0	5	0	0
Barley bear	5	18	0	7	3	0	6	18	0	6	0	0
Blanded bear	5	12	0	6	8	0	6	8	0	5	10	0
Muirland bear	5	3	0	5	12	0	6	0	0	5	6	0
Great oats	4	13	4	6	16	0	5	0	0	4	8	0
Small oats	4	0	0	6	0	0	4	12	0	4	0	0
Pease	4	10	0	7	2	0	4	9	0	4	0	0
Malt	6	13	4	8	0	0	7	10	0	6	10	0

	1748,			1749,			1750,			1751,		
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
The boll of oatmeal	5	8	0	6	0	0	6	6	0	8	0	0
Wheat	8	16	0	8	0	0	8	4	0	9	7	0
Barley bear	6	5	0	6	0	0	6	6	0	7	4	0
Blanded bear	5	18	0	5	14	0	5	16	0	6	18	0
Muirland bear	0	0	0	5	7	0	5	10	0	6	6	0
Great oats	4	14	0	4	16	0	5	10	0	6	10	0
Small oats	4	4	0	4	0	0	4	18	0	6	0	0
Pease	3	15	0	4	0	0	6	0	0	7	0	0
Malt	7	0	0	6	12	0	7	6	0	8	0	0

	1752,			1753,			1754,			1755,		
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
The boll of oatmeal	8	0	0	7	10	0	5	19	0	7	0	0
Wheat	8	16	0	9	0	0	7	18	0	8	4	0
Barley bear	7	16	0	8	10	0	6	0	0	6	18	0
Blanded bear	7	10	0	7	10	0	5	12	0	6	8	0
Muirland bear	6	14	0	7	0	0	5	0	0	5	18	0
Great oats	7	0	0	6	12	0	5	6	0	6	6	0
Small oats	6	0	0	6	0	0	4	18	0	5	18	0
Pease	7	10	0	6	4	0	4	12	0	6	0	0
Malt	8	0	0	9	10	0	7	0	0	7	15	0

	1756,			1757,			1758,			1759,		
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
The boll of oatmeal	9	12	0	8	0	0	5	16	0	5	8	0
Wheat	13	4	0	10	10	0	9	0	0	8	0	0
Barley	9	12	0	8	10	0	6	5	0	6	4	0
Blanded bear	9	0	0	7	18	0	5	10	0	5	12	0
Muirland bear	8	10	0	7	12	0	5	0	0	5	0	0
Great oats	8	8	0	7	10	0	5	2	0	4	16	0
Small oats	7	10	0	6	14	0	4	0	0	4	0	0
Pease	8	10	0	8	0	0	4	4	0	3	12	0
Malt	10	12	0	10	0	0	7	5	0	7	0	0

Crop

	Crop 1760,			Crop 1761,			Crop 1762,			Crop 1763,		
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
The boll of oatmeal	5	6	0	6	3	0	9	0	0	7	0	0
Wheat	8	0	0	8	14	0	11	12	0	9	14	0
Barley	5	15	0	6	6	0	8	2	0	8	0	0
Blanded bear	5	0	0	5	14	0	7	8	0	7	4	0
Muirland bear	4	10	0	5	0	0	6	18	0	6	12	0
Great oats	4	14	0	5	12	0	8	8	0	6	6	0
Muirland oats	4	0	0	4	16	0	7	4	0	5	16	0
Pease	4	16	0	4	16	0	8	0	0	6	12	0
Malt	7	0	0	8	0	0	9	12	0	10	0	0

	1764,			1765,			1766,			1767,		
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
The boll of oatmeal	8	0	0	9	12	0	9	12	0	9	4	0
Wheat	10	15	0	12	0	0	10	16	0	12	0	0
Barley	8	2	0	10	4	0	10	16	0	8	7	0
Blanded bear	7	10	0	9	10	0	10	4	0	8	5	0
Muirland bear	6	15	0	8	14	0	9	12	0	7	17	0
Great oats	7	4	0	8	10	0	9	0	0	8	8	0
Muirland oats	6	6	0	8	0	0	8	8	0	7	10	0
Pease	7	4	0	8	8	0	9	0	0	8	0	0
Malt	9	16	0	12	0	0	12	12	0	11	8	0

	1768,			1769,			1770,			1771,		
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
The boll of oatmeal	7	4	0	8	4	0	8	4	0	9	6	0
Wheat	12	0	0	10	0	0	9	16	0	11	8	0
Barley	6	12	0	8	4	0	8	8	0	9	9	0
Blanded bear	6	0	0	7	4	0	7	8	0	8	9	0
Muirland bear	5	12	0	6	12	0	6	6	0	7	16	0
Great oats	6	0	0	7	4	0	7	0	0	8	2	0
Muirland oats	5	8	0	6	4	0	6	0	0	7	0	0
Pease	6	18	0	6	12	0	6	12	0	7	10	0
Malt	8	0	0	10	4	0	10	10	0	11	10	0

	Sterling, 1772,			Sterling, 1773,			Sterling, 1774,			Sterling, 1775,		
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
The boll of oatmeal	0	16	0	0	15	0	0	15	3	0	12	0
Wheat	1	0	6	1	2	0	1	0	0	0	18	0
Barley bear	0	16	6	0	17	6	0	15	6	0	13	10
Blanded bear	0	15	0	0	15	6	0	13	8	0	12	4
Muirland bear	0	14	0	0	14	6	0	12	0	0	11	0
Great oats	0	13	6	0	13	6	0	13	0	0	10	4
Small oats	0	12	0	0	12	0	0	10	6	0	8	10
Pease	0	13	0	0	11	6	0	12	0	0	9	9
Malt	1	0	0	1	1	0	1	0	0	0	18	0

Crop

	Crop 1776,			Crop 1777,			Crop 1778,			Crop 1779,		
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
The boll of oatmeal	0	11	6	0	12	0	0	12	6	0	10	8
Wheat	0	16	6	1	0	0	0	17	6	0	14	6
Barley bear	0	12	0	0	13	9	0	13	9	0	12	6
Blanded bear	0	10	6	0	12	0	0	12	0	0	11	6
Muirland bear	0	9	6	0	11	0	0	11	0	0	10	6
Great oats	0	10	0	0	10	0	0	10	10	0	9	3
Small oats	0	8	6	0	8	6	0	8	6	0	8	9
Pease	0	9	6	0	9	10	0	9	6	0	7	9
Malt	0	16	0	0	17	6	0	17	6	0	16	6

	1780,			1781,			1782,			1783,		
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
The boll of oatmeal	0	13	4	0	12	0	1	0	0	0	16	0
Wheat	0	19	6	0	18	0	1	3	6	1	0	0
Barley bear	0	14	0	0	12	9	1	0	0	0	17	0
Blanded bear	0	13	0	0	11	9	0	17	6	0	15	6
Muirland bear	0	12	0	0	11	0	0	16	6	0	14	6
Great oats	0	10	0	0	10	0	0	14	6	0	13	6
Small oats	0	8	9	0	8	9	0	10	0	0	11	0
Pease	0	10	6	0	10	6	0	14	0	0	14	0
Malt	0	18	6	0	18	0	1	6	0	1	3	0

	1784,			1785,			1786,			1787,		
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
The boll of oatmeal	0	15	6	0	13	4	0	15	3	0	14	4
Wheat	0	19	0	0	19	0	0	18	6	1	1	0
Barley bear	0	17	0	0	13	6	0	15	6	0	15	0
Blanded bear	0	15	6	0	12	6	0	14	6	0	13	6
Muirland bear	0	14	6	0	11	6	0	13	6	0	12	9
Great oats	0	13	4	0	11	0	0	13	0	0	13	0
Small oats	0	10	0	0	9	0	0	10	6	0	10	6
Pease	0	11	0	0	10	6	0	13	0	0	12	6
Malt	1	2	0	0	18	6	1	0	6	1	0	0

	1788,			1789,			1790,			1791,		
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
The boll of oatmeal	0	12	0	0	13	9	0	16	0	0	15	4
Wheat	1	1	0	1	2	6	1	2	6	1	0	0
Barley bear	0	13	9	0	15	9	0	16	3	0	18	0
Blanded bear	0	12	3	0	14	0	0	15	0	0	16	6
Muirland bear	0	11	0	0	13	0	0	13	4	0	15	0
Great oats	0	10	6	0	12	0	0	14	3	0	13	6
Small oats	0	9	0	0	10	6	0	12	6	0	12	0
Pease	0	9	8	0	10	6	0	12	0	0	11	6
Malt	0	19	0	1	0	9	1	2	0	1	3	0

Crop

	Crop 1792.			Crop 1793.			Crop 1794.			Crop 1795.		
	L.	s.	d.	L.	s.	d.	L.	s.	d.	L.	s.	d.
The boll of oatmeal	0	16	3	0	16	6	0	16	8	1	0	0
Wheat	1	0	6	1	3	0	1	4	0	2	2	6
Barley bear	0	19	3	0	18	4	1	1	0	1	1	6
Blanded bear.	0	17	6	0	16	8	0	19	4	0	19	10
Muirland bear	0	13	9	0	15	0	0	17	8	0	18	2
Great oats	0	12	0	0	15	0	0	13	0	0	17	0
Small oats	0	10	6	0	13	0	0	13	4	0	15	4
Pease	0	12	0	0	13	3	0	15	0	0	17	6
Malt	1	4	3	1	3	4	1	5	6	1	6	6

	1796,	1797,	1798,	1799,	1800,
The boll of oatmeal	0 16 10	0 14 0	0 16 0	1 11 6	2 1 4
Wheat	1 5 6	1 1 6	1 2 0	1 15 0	2 15 0
Barley bear	1 2 0	0 16 0	0 16 6	1 8 6	2 2 0
Blanded bear	1 0 4	0 14 6	0 15 0	1 7 0	2 0 0
Muirland bear	0 18 8	0 12 10	0 13 4	1 5 0	1 18 0
Great oats	0 14 8	0 12 9	0 14 6	1 4 8	1 15 6
Small oats	0 13 0	0 11 10	0 12 10	1 0 0	1 13 0
Pease	0 12 0	0 13 6	0 12 9	1 7 9	2 4 0
Malt	0 17 0	1 1 0	1 1 6	1 13 6	2 7 0

	1801,	1802,	1803,	1804,
The boll of oatmeal	0 18 0	0 17 4	0 18 6	1 0 0
Wheat	1 16 4	1 7 0	1 4 9	2 0 7
Barley bear	1 5 6	0 18 0	0 17 5	1 10 0
Blanded bear	1 4 0	0 16 0	0 15 9	1 7 6
Muirland bear	1 2 0	0 14 6	0 14 3	1 5 0
Great oats	0 16 8	0 15 3	0 16 6	0 18 0
Small oats	0 15 0	0 13 0	0 14 0	0 16 0
Pease	0 16 6	0 15 3	0 16 11	0 17 9
Malt	1 10 6	1 8 0	2 0 0	2 12 0

	1805,	1806,	1807,	1808,
The boll of oatmeal	1 0 6	1 2 0	1 8 4	1 6 6
Wheat	1 11 4	1 16 6	1 12 3	2 4 4
Barley bear	1 4 6	1 5 9	1 9 6	1 7 4
Blanded bear	1 3 0	1 4 0	0 0 0	0 0 0
Muirland bear	1 1 0	1 2 6	1 5 0	1 5 4
Great oats	0 19 0	0 19 4	1 5 5	1 2 8
Small oats	0 17 0	0 18 0	1 2 0	1 1 0
Pease	0 13 0	1 0 6	1 10 6	1 9 9
Malt	2 6 0	2 7 9	2 11 6	2 9 4
Potatoe-oats	0 0 0	1 1 6	1 7 2	1 5 11

Average

*Average Prices of Grain for periods of 20 years from
1654 to 1808.*

		Wheat.			Barley.			Oats.		
		£.	s.	d.	£.	s.	d.	£.	s.	d.
From 1654 to 1675		0	12	7 $\frac{1}{2}$	0	9	2 $\frac{1}{2}$	0	7	0
1676 — 1695		0	11	1 $\frac{1}{2}$	0	8	4 $\frac{1}{2}$	0	6	9 $\frac{1}{2}$
1696 — 1715		0	14	2 $\frac{1}{2}$	0	10	6 $\frac{1}{2}$	0	8	10 $\frac{1}{2}$
1716 — 1735		0	12	11 $\frac{1}{2}$	0	9	11 $\frac{1}{2}$	0	8	3 $\frac{1}{2}$
1736 — 1755		0	13	8 $\frac{1}{2}$	0	11	3 $\frac{1}{2}$	0	9	1
1756 — 1775	inclusive	0	18	0	0	13	11	0	11	10 $\frac{1}{4}$
1776 — 1795		1	1	1 $\frac{1}{2}$	0	16	0 $\frac{1}{2}$	0	12	4 $\frac{1}{2}$
1796 — 1808		1	13	3 $\frac{1}{2}$	1	6	4 $\frac{1}{2}$	0	19	7 $\frac{1}{4}$

*Average Prices of Grain for periods of 40 years from
1654 to 1808.*

	Wheat,			Barley,			Oats,		
	£.	s.	d.	£.	s.	d.	£.	s.	d.
From 1654 to 1695	0	11	10 $\frac{1}{4}$	0	8	9 $\frac{1}{4}$	0	6	10 $\frac{1}{8}$
1696 — 1735	0	13	7	0	10	3	0	8	7
1736 — 1775	0	15	10	0	12	7	0	10	5 $\frac{1}{2}$
1776 — 1808	1	7	2 $\frac{1}{2}$	1	1	2 $\frac{1}{2}$	0	15	11 $\frac{1}{4}$

By the preceding Tables it appears, that, from the year 1654 to 1808, the average price of grain, if it be taken for periods of 40 years, has been gradually rising; but if the average be taken for no more than periods of 20 years, it will be found, that, till 1775, its rise was sometimes interrupted, as the average of some of the intermediate periods of 20 years was occasionally lower than that of some of the periods preceding. Except in particular seasons, there seems to have been no very considerable rise before the middle of last century. From that period to 1794, the rise is much greater than any of the former periods. From 1756 to 1775, the rise

is

is greater in proportion than in the succeeding 20 years. But the most remarkable rise is from 1795 to 1808. Within the last 40 years the price has about doubled; whereas in the course of 100 years prior to that time, it had risen scarcely a third.

It would be difficult to assign the precise reasons of these irregularities in the progressive rise and occasional retrogressions of the average prices. The following particulars, however, may all, more or less, have had some influence on the prices.

1. Comparative state of population.
2. ——— value of money, whether effected by paper currency or other causes.
3. ——— consumption of grain by horses and other animals.
4. ——— luxury, causing more or less consumption and waste.
5. State of agriculture.
6. The use of substitutes for bread, such as potatoes.
7. State of the seasons, causing better or worse crops.
8. State of importation and exportation.
9. State of peace or war.

It can hardly be doubted that the tendency of the first four of these causes, especially since the middle of last century, has been to raise the prices of grain. Any one of them might have been insufficient to bring about such a rise as has taken place; but their joint operation may perhaps be thought adequate to the production of this effect. From 1795, or even earlier, to 1808, it is not improbable that the average prices of grain have been considerably

considerably influenced, not only by the causes already assigned, but also by a still farther decrease in the value of money, by an unusual occurrence of scanty crops, and by the difficulty of importation occasioned by the events of the wars which have fallen out since that period, as well as by the alteration of the law which regulates the prices at which grain may be imported and exported.

Whenever the rise of the prices has been sudden and considerable, with a correspondent decline afterwards, the cause seems to have been the badness of the crops, occasioned by the unfavourable state of the seasons. This was the case particularly in the years 1799 and 1800, and it appears also to have happened about the end of the seventeenth century, in the years 1696 and 1698. The same circumstance, although in a less remarkable degree, must likewise have frequently occurred in the course of 155 years, the period comprised in the table of the fiars. At the long run, however, the operation of the state of the seasons may be considered as neutral in its effect on the average prices of grain, because very good seasons producing better crops than ordinary do sometimes occur, as well as very bad seasons causing unusually scanty crops.

Of the other causes which have been mentioned as affecting the prices of grain, it is plain that some must have had a tendency to diminish the prices, especially the improved state of agriculture, and the introduction and general use of potatoes.

The effect of the importations and exportations of grain on its prices, as well as that of a state of peace or of war, is not so easily ascertained, because the operation

tion of these causes is not so plainly perceived or so easily understood.

Rise of rent compared with the rise of the prices of grain.—From the year 1654 to 1808, it appears that the average price of grain has not risen much more than to double, and at any rate not to treble. On the other hand, by comparing the present rent of the country with the valuation of it, made about the same distance of time, i. e. about 160 years ago, it appears that the rent of land has risen more than ten times. Why the rent of land has risen so much more in proportion than the price of grain it may not be easy to determine. The following causes, however, may have contributed to produce this effect :

1st, The greater security of farmers in the possession of their farms, by means of leases of a competent length becoming more prevalent within the last fifty years. Without this, such an enterprising, industrious, and opulent race of farmers as the present certainly would not have sprung up.

2d, The greater economy of labour, by the introduction of machines in some agricultural operations before performed by the hand, as well as by the invention of new implements and improvement of old ones, and also by making the animals employed in husbandry do much more work now than the same number did formerly. For this the animals are properly qualified by being much better fed.

3d, The higher cultivation of the soil, and the use of better and more profitable courses of crop, by which
the

the farmer is enabled to raise much more grain, and to maintain far greater numbers of live-stock.

4th, The improvement of roads, the erection of bridges, and the introduction of the use of carts, by which the conveyance of agricultural commodities is much facilitated. Before these improvements took place, the farmers commodities as well as coals were carried on horses backs. Wajns commonly drawn by two oxen and two horses, and sleds drawn by one horse, were used to bring the crop from the fields to the barn-yard.

No. VI.

Queensferry Passage.

“ Between the North-Ferry and Rosyth Castle is St Margaret's Bay or Hope, so called from the Princess of that name, afterwards Queen of Malcolm III. having in her flight from England landed there. On her account the ferry is called the Queensferry, being her constant passage to and from her favourite residence at Dunfermline. This passage is well known to every traveller; the distance is near two miles. All the boatmen reside in the North Ferry. There are four boats and four yawls employed upon it; these belong to certain pro-

prietors of land on each side of the Frith, who claim an exclusive right to the passage *."

"There is much obscurity about the founding of this passage. The right of it is private property, and seems originally to have been attached to the lands of Muirhall, lying in the neighbourhood, consisting of about seventeen acres, said to have been gifted by Queen Margaret for upholding the passage."

"Till lately there were two descriptions of proprietors, the proprietors of the water passage, and the proprietors of the boats and yawls plying on the passage. The latter consisted of several persons, shipmasters and others, who erected themselves into what is called a boat club, built and kept in repair a sufficient number of boats and yawls, and took leases from the proprietors of the water passage, by which they were entitled to ply on this ferry. Such was the practice till the year 1784, when the proprietors of the water passage, refusing to grant leases to the owners of boats and yawls, purchased the whole of them, and have since let them by roup "to one or more tacksmen or lessees, who hold them by a lease, which is never shorter than one year and seldom longer than three †. By this change, the public have gained several advantages. The boats and yawls being under the joint inspection of Justices of the Peace on both sides of the Frith, are kept in excellent repair. The rules and regulations of the passage have been painted on boards, and affixed at some proper place on the inns at both sides."

"It

* Statistical Account of Inverkeithing.

† Ed.

"It has been much debated whether or not the charter by which the passage is held, should be taken away, indemnification given to the proprietors, and the right to the passage laid open to every one who should chuse to ply upon it. There is not much difficulty, it is apprehended, in deciding the question. A passage so much frequented as this must be kept under strict regulations. These are best made, and can only be well observed by making the right of the passage private property, or by vesting it in some company. Besides, were the passage laid open to every needy adventurer who might find means to fit out a boat or yawl, the public would have no security that such boats and yawls would be kept in sufficient repair or properly manned. From motives of profit, too, the owners of them might be tempted to risk a passage, which from the weather might be dangerous or even sometimes fatal."

"So long then as the passage is furnished with good boats and yawls well manned, so long as it is kept under its present regulations, and so long as the present rates of the several freights are so reasonable, or rather so very low, the public ought to be well satisfied that it continue with the present proprietors *."

The justices of the peace on both sides of the Frith have the joint power of fixing the rates of the freights and of inspecting the sufficiency of the boats and landing places.

The boats are kept in repair at the expence of the proprietors, or of the lessees, or of both jointly, according to the stipulation between the parties.

R 3

The

* Statistical Account of Queensferry.

The lessee provides the number of boatmen requisite for working the boats and yawls. They are said to be as good ferrymen as any in Scotland*.

"The only fund for upholding the landing places on both sides, is an appropriation of the fortieth part of the gross freights called the *ferry silver*, amounting at an average to about L.40 per annum. Occasional aid has been given by the Royal Boroughs, and by the commissioners for the forfeited estates.†"

Freights.

	s.	d.
A coach and four	4	0
A two horse chaise	2	6
A one horse gig	1	6
A four wheeled cart	2	6
A two horse cart	1	0
A one horse cart	0	10
A horse	0	4
A lowland cow or ox	0	4
A highland cow or ox	0	3
A sheep	0	0½
A sow	0	2
A calf	0	1
A one horse load	0	3
A passenger	0	1
Freight of a boat in the day time	2	6
Freight of a yawl in the day time	1	0
Freight of a boat in the night time	3	4
Freight of a yawl in the night time	1	6
These		

* Ed.

† Statistical Account of Queensferry.

These rates were fixed by the Justices of the Peace met at Dumfermline in the year 1701. Various attempts have been made by the proprietors of the boats to raise the rates, but the justices of the peace have never permitted any alteration. Indeed, there seems to have been no occasion for any, as the annual rent of the boats payable to the proprietors has risen, within the last thirty years, from L.60 to L.400.

In the present year, A. D. 1809, a bill has been brought into parliament and passed into an act appointing trustees responsible to his Majesty and the two houses of parliament, to manage the passage instead of the former proprietors, from whom the right of passage is to be taken upon a compensation being allowed. It is proposed to make several alterations in the landing places at each side and in the approaches to them. It is also intended to build some new inns and sheds for the accommodation of the passengers as well as houses for the boatmen on both sides of the Frith. A proportion of boats are always to be stationed at each side so as that not more than two thirds of the boats shall remain at either side at one and the same time. In order to make the necessary purchases of property, and to carry these alterations into execution, it is enacted, "That so soon as it shall be made manifest to the barons of the Court of Exchequer in Scotland, that a sum equal to one half of the estimated expence necessary for carrying this act into execution, appearing from the schedule annexed to the act"; and also equal

R 4

to

* For all the works and operations specified in the schedule, and to make the purchases necessary therefor, it is estimated that the sum of L.18,000 will be required.

to one half of such further sum as shall be required to make satisfaction to the person or persons who shall be found to have any property or right in the said ferry, for the purchases to be made from them in the manner herein after-mentioned, shall have been subscribed or borrowed upon the security of the tolls or duties hereby granted, it shall and may be lawful for the barons of the said court, and they are hereby directed upon the application of the trustees appointed by this act, from time to time to issue their warrant or warrants to the receiver general of Scotland, for payment out of any public money then in his hands of any sum or sums of money specified therein, not exceeding the whole the amount of the sum so subscribed or borrowed, to be applied therewith by the said trustees in carrying this act into execution; and every sum paid by the said receiver general shall be allowed in his accounts: Provided always, that it shall further be made manifest to the said barons, that for every sum so directed to be paid by such warrant, a sum equal thereto of the money so subscribed or borrowed shall have been deposited with the Bank of Scotland, or the Royal Bank of Scotland, upon an account to be opened for that purpose; and every sum so paid upon any such warrant, shall be deposited therewith upon the same account, and shall be drawn therefrom and applied by the said trustees for the purposes of this act."

The interest of the borrowed money is to be paid out of the freights, and the surplus, after paying other necessary expences, is to be set apart as a sinking fund for extinguishing the debt. The trustees are also empowered

red to regulate the boats either as to number or circumstances as they think proper, and likewise to raise or lower the freights as is judged requisite, but not to exceed the maximum stated in the act. Any variation of the rates of freight, however, must be with the consent of five sixths of the creditors who may have lent money on the security of the rates. The following are the trustees nominated in the act: the keeper of the privy seal of Scotland, the Lord Chancellor General, the Lord Advocate, the Lord Justice-Clerk, the Lord Clerk Register, the Lord Chief Baron of the Court of Exchequer in Scotland, the Vice-Chancellor of Scotland, the keeper of his Majesty's Signet, the Majesty's Post-master General for Scotland, his Majesty's Lieutenant for the counties of Perth, Linlithgow, Kinross, and Clackmannan, the Commander of his Majesty's land forces in Scotland, and the Admiral commanding his Majesty's ships and vessels in the Frith of Forth, the Lord Provost of the City of Edinburgh, the Chief Magistrate of the burghs of Perth, Linlithgow, Queensferry, Inverkeithing, and Dunfermline, the Dean of the Guildry of the said town of Dunfermline, all for the time being, and the Sheriffs for the time being of the counties of Perth, Linlithgow, Fife, Kinross, and Clackmannan, and the proprietor for the time being of the estate of Newbattle, near unto or adjacent to the said town of Queensferry in the said county of Linlithgow, and every person in his own right or in the right of his wife, possessed in the *dominium utile* of lands in the said counties of Perth, Linlithgow, Fife, Kinross, or Clackmannan, valued in the cess books of such counties respectively, at less than one hundred pounds Scots, and the eldest son of every such

For every *Highland ox, bull, cow, or heifer*, a sum not exceeding sixpence.

For every *calf, sow, boar, or hog*, a sum not exceeding threepence.

For every *sheep or goat*, a sum not exceeding twopence.

For every *lamb or kid*, a sum not exceeding one penny.

For every *dog or puppy*, a sum not exceeding twopence:

For *grain, flour, meal, hay, and straw, goods, wares, and merchandize*, a sum not exceeding at the rate of sixpence per barrel bulk.

For every *Passenger beaft the mast*, a sum not exceeding sixpence.

For every *Passenger before the mast*, a sum not exceeding twopence.

“ Provided always and be it enacted, that it shall and may be lawful for the said trustees to order and direct, that any yawl or pinnace licensed by them may be hired to cross the said ferry for any sum not exceeding two shillings and sixpence while it is light, and not exceeding five shillings after it is dark ; and that any boat or larger vessel licensed to ply at the said ferry, may be hired to cross the same for any sum not exceeding five shillings while it is light, and not exceeding eight shillings after it is dark : Provided nevertheless, that where the above other rates and duties hereby directed to be paid at and for the passage of the said ferry, shall exceed the said sums of hire respectively, it shall and may be lawful for the said trustees to order and direct that the same shall be paid in place of such hire.”

“ Provided

“ Provided always and be it enacted, that no rates or duties shall be demanded or taken for horses or carriages of any description employed or to be employed in carrying the mails and expresses under the authority of his Majesty’s Postmaster General, either when employed in conveying, fetching, or guarding such mails or expresses, or in returning back from conveying the same, nor for any officers or soldiers of his Majesty’s army or militia upon duty, or on their march, nor for the horses of any such officers, nor for the horses, cattle, or carriages employed in carrying or conveying their arms or baggage, or returning after having conveyed the same ; nor for any waggon, wain, cart, or other carriage whatsoever, or the horse, or horses, or other cattle drawing the same, which shall be employed in conveying any ordnance, barrack, or commissariat, or other public stores of or belonging to his Majesty, or for the use of his Majesty’s forces ; nor for horses furnished by or for persons belonging to any corps of yeomanry or volunteer cavalry, and rode by them in going to or returning from the place appointed for exercise ; nor for any persons belonging to any corps of volunteers, provided that such persons be dressed in the uniform of their respective corps, and have their arms, furniture, and accoutrements, according to the regulations provided for such corps respectively at the time such exemption is claimed ; nor for carts, carriages, or cattle travelling with vagrants sent with legal passes ; and if any person shall claim or take benefit from any of the exemptions aforesaid, without being entitled thereto, such person shall forfeit a sum not exceeding forty shillings Sterling.”

“ And

“ And be it further enacted, that the said trustees may, and they are hereby required to erect or cause to be erected, weighing engines at every pier or landing place, for weighing all carts and similar carriages which shall cross at the said ferry, in order to ascertain the toll to be taken for such carriage or carriages, and that before they respectively shall be permitted to be put on-board any boats plying at the said ferry; and in case any person or persons shall hinder or obstruct the weighing of any such carriages as aforesaid, such person or persons shall, for every such offence, forfeit and pay a sum not exceeding forty shillings Sterling.”

And be it further enacted, that a table of the rates and duties hereby granted, shewing the amount thereof directed to be levied by the said trustees, and of the penalties hereby imposed, shall be fixed and continued in legible characters at every landing place, and at the principal inns on either side of the said ferry.”

“ And be it further enacted, that if any person or persons shall delay or refuse to pay the rates and duties hereby granted, when the same shall be demanded, such person or persons shall forfeit a sum not exceeding five pounds; and if any such person or persons shall assault or interrupt in the collection thereof any person or persons duly authorised to receive the same, every such person so offending shall forfeit a sum not exceeding twenty pounds.”

“ And in order to promote the accommodation of passengers, and to secure to them a regular passage at the said ferry, be it further enacted, that it shall and may be lawful for the said trustees, and they are hereby authorised and required to appoint and to continue

two resident superintendants of the said ferry, one at either side, with suitable salaries and such powers as shall be necessary for enforcing the observance of this act, and the orders, rules, and regulations to be given and made by the said trustees for the due management and good government of the said ferry."

"And in order to prevent offences against this act and the infringement of any orders, rules, and regulations as aforesaid, to be made by the said trustees, by providing means for the more immediate punishment thereof, be it further enacted, that either of the said superintendants shall have power, and they are hereby authorised to carry any person who shall be guilty of any offence against this act, or of any infringement of the said orders, rules, and regulations, instantly before a justice of the peace of either of the said counties of Fife and Linlithgow, who shall immediately punish any such offender in the manner directed by this act, or pursuant to such orders, rules, and regulations, in case he or she shall be convicted of any offence against the same, or any of them: and in the event that a justice of the peace of such counties cannot immediately be found, it shall and may be lawful for any such superintendant to lodge such offender in the goals of Inverkeithing or Queensferry respectively, until he can be carried before such justice of the peace: Provided always, that such offender shall not be detained in such a goal more than twenty-four hours before being carried before such justices of the peace."

No. VII.

State of the annual number of poor in the parish of Bathgate, and of the sums of money paid for their support from January 1799 to January 1809 inclusive.

		1.	2.	3.		
		Monthly.	Incidental.			
From January 1799 to January 1800,				L.	s.	d.
1800	1801,	26	34	51	7	3
1801	1802,	26	38	153	0	2
1802	1803,	27	40	139	11	8
1803	1804,	26	26	68	6	3
1804	1805,	22	28	65	1	2
1805	1806,	23	34	68	10	10
1806	1807,	22	30	66	0	0
1807	1808,	19	24	62	5	0
1808	1809,	18	17	67	12	6
		19	21	77	0	0
		228	292	813	14	10 $\frac{1}{2}$
Yearly average		22 $\frac{4}{7}$	29 $\frac{1}{2}$	81	7	5 $\frac{1}{2}$

The first column includes those who from age or infirmity can do very little toward their own support, and are allowed from four to eight shillings per month, and occasionally shoes and clothes. They reside in houses of their own, or in those of their nearest relatives, and are attended by their children or relatives, and partly supported by them. The second column includes

includes those who are able to support themselves in part, or with the additional aid of from three to five shillings per six weeks. The third column shews the sum expended in supporting the whole number of the poor.

The fund for the support of the poor consists of the collections at the church doors, and of the dues on mortcloths and proclamations of banns; and as the church is well attended, this sum is sufficient in ordinary years. During the dearth of the years 1800 and 1801, the ordinary fund being insufficient, the heritors contributed liberally; but since that time the kirk-session have supported the poor from the fund above-mentioned, and have even accumulated a small balance against an unfavourable season.

It may be observed that the poor, under the management of the kirk-session, consist almost entirely of females far advanced in years, and of a few orphans. The male population of the parish support those of their own sex when in want, by means of friendly societies, possessed of a yearly income of upwards of L.230 Sterling.

State of the Births, Marriages, and Deaths, in the parish of Bathgate, from January 1799 to January 1809 inclusive.

	Marriages.	Births.	Deaths.
From January 1799 to January 1800,	19	64	44
1800 to 1801,	17	58	41
1801 to 1802,	19	55	43
1802 to 1803,	16	73	26
1803 to 1804,	25	55	40
1804 to 1805,	25	61	43
1805 to 1806,	21	80	54
1806 to 1807,	27	64	51
1807 to 1808,	27	81	52
1808 to 1809,	19	58	48
	215	649	442
Yearly average,	$21\frac{1}{2}$	$64\frac{9}{10}$	$44\frac{1}{2}$

The average of the number of marriages and deaths may be depended on ; but as some of the seceders do not register the births of their children, six should be added to the annual number, which will make the average 70 nine-tenths instead of 64 nine-tenths as stated in the table.

In this parish vaccine inoculation is universal. None are known to have taken the natural small-pox after being innoculated. Only two instances of natural small-

small-pox have occurred in the parish since the year 1800, and both proved mortal; but the patients were brought into the parish with this disease upon them.

Before vaccine inoculation became general, viz. previous to the year 1800, nineteen died yearly of the natural small-pox. This is an uncontestable proof of the advantage of vaccine inoculation.

By the last numeration, the population of the parish has increased 257 since the year 1800; but there is good ground for stating the actual increase at 420, making the whole population above 2900. This increase has been owing to new settlers.

Upwards of 150 men from this parish are at this time serving in the navy, the regular army, and the militia.

There are 200 looms employed in the weaving of cotton goods for the Glasgow manufactures, who pay for weaving, tambouring, and the sewing of the cloth nearly L.200 Sterling per week to the inhabitants of this parish whom they employ.

Forty looms are likewise employed in the manufacturing of linen and other cloths for the use of the inhabitants of the parish.

JAMES THORNTON, *Schoolm. & Sess. Clk.*

No. VIII.

Account of Births, Deaths, Marriages, number of Poor on the roll, expenditure of money for their maintenance, and money collected at the church doors of the parish of Kirkliston, for ten years preceding 1808.

Year.	Births.	Deaths.	Marriages.	Poor.	Expenditure.	Collections.
1798	45	11	12	50	L. 103	L. 30
1799	43	12	16	50	110	32
1800	41	14	11	50	172	27
1801	48	25	10	—	199	28
1802	52	19	14	—	169	28
1803	44	15	8	—	153	60
1804	40	11	16	—	140	23
1805	27	22	10	41	182	42
1806	34	15	16	38	138	41
1807	32	20	11	39	115	36
average	40	16	12	45	148	35

The funds for the maintenance of the poor consist of the interest of a bond of L.100 at five per cent. the money collected at the church door amounting to about L.35 at the above average of 10 years, money collected at funerals about L.3 annually, and about L.1 for some seat rents in the church. The rest is raised by assessment of the heritors as it is wanted. I have likewise to remark, that in the account of money expended for the poor, are comprehended various other articles of expence which I cannot easily get separated, such as the salaries

salaries of the precentor, the session, presbytery and synod clerks, occasional small repairs of the church, schoolhouse, and manse, transporting vagabonds, surgeon's bill, and school fees for poor children, &c.

I cannot account for the falling off in the number of births for the last three years, but I believe these registers, especially that of burials, are not very accurately kept. It is likewise proper to remark, that in the year 1803, there was a sum collected for the infirmary, about L.30. In 1805 L.12 was collected for the patriotic fund; in 1806 L.6 was collected for the dispensary; and in 1808, L.13. for the British prisoners in France***. I have omitted fractions, as I suppose very scrupulous accuracy is not required.****There are four schools in the parish, viz. the parochial school, salary 400 merks, with the other advantages provided by law; fees of teaching fixed by the heritors, reading 2s. per quarter, reading and writing 2s. 6d. arithmetic 3s. arithmetic and Latin 5s. 6d. A school at Clifton founded by Sir George Wishart in the year 1718, for which he mortified the sum of 2000 merks. Two other schools to which the Earl of Hopetoun contributes. The average number of scholars at each may be about 40.

There are 250 horses, 669 cattle, 987 sheep, 2 goats, and 86 swine.

There may be about 6000 acres of land in the parish, all arable and under cultivation, except a few acres round gentlemens houses in planting and pleasure ground.

CHARLES RICHIE.

No. IX.

Rules of the West-Lothian Farmers Club.

I. The meetings of the Society shall be held on the first Friday after the terms of Candlemas, Whitsunday, Lammas, and Martinmas, between the hours of two and three afternoon.

II. Every member of this Society shall be an actual proprietor of land to the extent of 30 acres ; or an actual occupier of lands to the extent of 50 acres ; or the son of an actual proprietor or occupier of lands to the extent of 100 acres ; or a land-steward or factor over 500 acres ; or a land-surveyor or person otherwise professionally employed in the management or improvement of land ; or a lecturer or writer on some agricultural subject ; or a professor of any of the sciences in any of the Universities.

III. No member shall be admitted but by ballot ; and every candidate for admission must be proposed by one member and seconded by another, at one of the regular stated meetings of the Society, but shall not be balloted for till the next regular meeting.

IV. On a ballot for admission taking place, if one in eight of the members present shall vote in the negative,
the

the candidate shall be rejected : If less than one in eight, he shall be admitted.

V. There shall be a president, vice-president, and treasurer elected annually by ballot, from among the members of the society, but who shall not be re-elected at the expiration of the year.

VI. To prevent any contest for offices, the ballot for the president, vice-president, and treasurer, shall be conducted in the following manner : Each member present shall be furnished with the name of every member of the society, printed or written on a separate piece of paper ; he shall then deposite in a hat or ballot-box the name of the member whom he wishes to hold the office to be ballotted for ; and if any gentleman obtain the votes of a majority of the members present, he shall be duly elected. If such majority shall not be obtained, the two gentlemen, who have the highest numbers, shall again be ballotted for in the same manner ; and he who shall then obtain a majority, shall be duly elected. If more than two shall obtain the highest number, they shall be ballotted as in the first case ; and if a majority of the votes of the members present shall still not be obtained, the ballot shall be continued, till, by withdrawing repeatedly the names of those who have not the highest number, they shall be reduced to two, when he who shall ultimately obtain a majority shall be duly elected.

VII. A secretary shall be chosen by ballot, who shall keep regular books, in which the proceedings of the

Society shall be entered.—He shall be allowed a salary not exceeding Five Guineas a year, and a contingent account for postages and stationary, and his expences at each meeting shall be paid by the Society.

VIII. Every proposal for adopting a new and altering an old rule shall be made at one of the regular stated meetings of the society, and decided upon by ballot at the next.

IX. There shall be no ballot in any case, unless twelve members be present.

X. The president, vice-president, and secretary shall, after every ballot, examine the boxes in the presence of the meeting, and declare the numbers and result.

XI. The ordinary affairs of the society shall be conducted by the president, vice-president, treasurer, and secretary, for the time being; but committees may be appointed for special purposes, as occasion shall require.

XII. Meetings may be called for any special purpose not prohibited by the rules, by the president, or, in his absence, by the vice-president, on giving ten days notice, by letters, to each of the members of the society; which letter shall specify the purpose of the meeting.

XIII. From time to time an agricultural subject shall be proposed, on which essays may be prepared to be read to the society; for which essays premiums may be offered: And any member may, with the consent of the

the president and vice-president, lay before, or read to the Society, any paper on any branch of agriculture.

When an essay or paper has been read, the president shall invite the members present to give their opinions on its contents.

XIV. Premiums may be offered for experiments, to be previously fixed upon, for ascertaining the merits of varieties of produce, of breeds of cattle, of agricultural implements or machinery, and for good conduct and expertness in labourers and servants ; and rewards may be given for any of these objects, after due consideration, by a committee to be appointed for that purpose, though not previously offered.

XV. The annual contribution of each member to the funds of the society shall be one guinea for each land-holder possessing lands valued at L,200 Scots, and half a guinea for all other persons.

XVI. The expence of each dinner shall be defrayed by those only who partake of it ; and the bill shall be called when the share of each gentleman present shall not exceed six shillings.

XVII. Any member may introduce as a visitor at any meeting of the society, any landholder, farmer, or person interested in agriculture, who shall pay his own expences.

XVIII.

The society shall make choice of a treasurer and clerk, the latter of whom shall, every year, or when any meeting of the general committee is to be called, write to the delegates ten days before the time of meeting.—For this purpose, every parish shall regularly send the clerk a note of the names of their representatives.

Each delegate shall keep a book, in which shall be inscribed the names of all the contributors in his parish; and he shall annually transmit a list of them to the clerk, that it may be exactly known who have a right to the funds of the society.

In order to facilitate business, there shall be chosen, in every parish, a sub-committee of subscribers, three of whom shall be a quorum. They shall have power to determine what shall be reckoned a ploughgate of land, or what other property shall be deemed of equal value to a ploughgate or ploughgates of land, and to direct with regard to the prosecution of thieves, robbers, &c. against whom information shall be given to any contributor in the parish; but the general committee shall alone have power to give orders on the treasurer of the society for what sums of money they shall think necessary for that purpose; and which, in all cases, they are to do, where the proceedings of the sub-committee have been regular, upon being convened for that purpose by the clerk, upon regular notice in writing as aforesaid, which any person interested may require of him to do.

The

The sub-committees shall always consult with the clerk to the general committee, (who shall be a practitioner before the different courts of law in the county, and resident in the county town,) with respect to all prosecutions; and the same shall be carried on and conducted by him, as general agent for the society, under the directions of the said committee.

Any of these sub-committees shall have power to convene the general committee, with a view to take their advice upon the occurrence of any difficult case; and any of the contributors who shall think their cause neglected by the sub-committee, may also require the clerk to convene the general committee, for the purpose of bringing an appeal before them, which he shall accordingly do by letter in the manner above-mentioned. But if the general committee shall find that the sub-committee have done right in refusing to prosecute, then the person at whose instance the general committee shall have been convened, shall be obliged to defray the expence of the entertainment of the meeting, if the committee think proper to exact it, provided always that the charge does not exceed four shillings Sterling for each member.

All debates shall be decided by a plurality of voices.

Any member of the society shall have liberty to attend the meetings of the committees, and to deliver his sentiments upon the subjects that may be before them; but unless he is a member of the committee, he shall have no vote in their decisions.

The

The members of the committees shall continue so for a year, unless they be extruded for misdemeanours.

Every subscriber who shall be found to conceal any offenders, shall for ever be excluded from receiving any benefit from the fund, and from being a member of the society.

MALCOLM HENDERSON, Preses.

Extracted by JOHN BOYD, Clerk.

No. XI.

Worked Oxen compared with Horses:

As to the question concerning the comparative advantages of employing horses and oxen in agricultural labour, the writer of this report can say little from his own observation or experience. Having applied to an intelligent farmer in one of the most fertile and best cultivated districts of Scotland, and who for many years has employed a proportion both of horses and oxen in the labour of a very extensive farm, he received from him the important communication on that subject which is subjoined to the following queries that were proposed to him.

Queries.

1. What number of oxen are required to perform as much work as two horses?

2.

2. What are the respective ages of horses and oxen when first fit to be employed in the draught?

3. How many years do horses and oxen continue to be employed in the draught?

4. What may be the average prices respectively of a horse and of an ox when first fit for the draught?

5. Is an ox more or less valuable after being laid aside from work than when he began to be employed in it, and how much more or less on an average?

6. Is it suitable to employ oxen in any other branch of agricultural labour besides that of ploughing?

7. Is a driver, besides the ploughman, necessary to manage oxen employed in the plough?

8. Is the untractableness of oxen an objection of any importance to their being employed in the draught, and does not the prejudice of servants against using oxen in the draught lead them to exaggerate their untractableness?

9. Is one work-horse in twenty annually lost on an average by untimely death, or how many more or less? What proportion of worked oxen may be annually lost by untimely death; and are oxen more or less subject than horses to occasional distempers, and thereby to be rendered oftener or not so often unfit for their usual work?

10. Is the expence of feeding the number of oxen requisite to perform the same labour with that of two horses greater or less than the expence of feeding two horses, and how much greater or less?

11. Supposing that it is at all proper to employ oxen in agricultural labour, what proportion may it be advisable to employ on a farm which requires ten teams to do

do the whole labour of it ; and on a farm where not more than two or three teams are requisite, should any proportion of oxen be employed ?

12. Be so good as to state any observations, not referred to in the queries, which may occur to you respecting the advantage or disadvantage of employing oxen in agricultural labour.

Answers.

" I shall give you a frank and fair account of my manner of working oxen for upwards of twenty years, and of the way and expence of feeding them, and leave you to judge of the propriety of performing a part of farm-labour with them.

" From the first of October, or as soon as the harvest is over, until the end of May, to which time we now contrive to make the Swedish turnips hold out, their constant food is straw with a feed of turnips evening and morning. Hay they never taste, except a small quantity in the field, in winter, while the ploughman eats his dinner. In spring, they come home in the middle of the day, at the same time with the horses, and then they get a few turnips instead of the hay. With this feeding they keep in excellent condition, and are capable of doing a great deal of work. In the summer months they get cut grass in the shed, between yokings, or during the hours of rest at mid day, and are turned into a pasture field through the night. They might certainly be kept at less expence, if constantly fed with cut grass; but I think they thrive better when allowed to go at large in the night time.

E

I shall take your queries in the order as nearly as may be.

1. I hold three oxen equal to perform the same work that two horses will do. For the eight months in which they are fed with turnips, they keep up with the horses without difficulty. They are regularly changed, so that (except in spring) every ox works four days in the week. Two oxen out of three are constantly in the yoke, but in frosty weather, when I generally employ the ploughmen in filling carts with dung, which is then taken out of the farm yard and laid up to a dunghill in any situation which is judged to be most suitable. On such occasions the oxen are laid idle in the straw yard; and then they get only one feed of turnips a day—not that I think they would not answer to draw in carts, but I have never had any adapted to them, because I find full employment for the men who drive them as above-mentioned. In frosty weather, or indeed in any weather, they may also be usefully employed in drawing in thrashing-mills, in every situation where these are wrought by animal power. Before I got mine constructed so as to go by water, the whole of the crop of one of my farms, for several years, was thrashed by thrashing-mills wrought by oxen. I found their pace far more equal and steady than that of horses. In summer, when oxen are fed with grass only, they certainly fall much short of horses fed with grass and corn, but this deficiency is fully compensated by the work of the extra oxen in the spring months; for, from the time when I begin to sow spring wheat, I always keep the whole constantly

T

at

APPENDIX.

at work, till the seed grain of every kind is deposited in the ground.

2. I always train my oxen to work, after harvest, when about three years and a half old, and the horses nearly at the same age.

3. I shall not say how long an ox might be wrought to advantage, as I seldom keep them more than three, never more than four years from the time when they begin to be employed in the draught. Horses, barring accidents, do not fall much off for twelve or fourteen years from the time when they are first employed in the draught.

4. An ox, when first laid under work, is worth from L.12 to L.16 Sterling. A horse at the same age, is worth from L.30 to L.35; and at the end of three or four years from the time when he begins to work, if free from blemishes, he is worth from L.40 to L.45.

5. The oxen selected for work, and those set apart to be immediately fed, are generally of equal value at the time. I do not always pick out the largest. There is something in the gait and form of these animals that denotes superior agility and vigour. These I always make choice of for work, without regard to their size. In general I find they improve each at the rate of L.2 per annum during the three years in which they are employed in the draught. Consequently an ox worth L.15 when first put to work, may be sold at L.21 when laid off work, if there is no material change in the markets. The oxen, which I do not train to work after harvest, are always fed with turnips and generally sold in February or March following, from twenty to twenty-five pounds or guineas. The draught oxen are
laid

laid off work in the beginning of harvest, and sold off at the age above-mentioned, from thirty to thirty-five pounds or guineas. From this it may naturally be inferred that the profit on feeding the work ox for the last six months is considerably greater than that on the idle ox. This, however, is not the case, because the work ox consumes daily at least one third more turnips than the idle one.

6. This query is partly answered in No. 1. and will be more fully answered in No. 10. and 11. Since I left off using oxen in the thrashing mill, they are employed only to plough and harrow.

7. The ploughmen invariably holds and drives, no driver being ever employed except during a few days when the young oxen are training. Young horses require the same attention.

8. When I first began to employ oxen in the draught, I found it up-hill work partly from the prejudice of my servants, but more from want of method. I now find little more difficulty in the training or in the employing of oxen than of horses. In eight or ten days they are generally so tractable as to be not only driven by the ploughman, but to carry him to and from the field.

9. By an account which I have kept for more than twenty years, I find that I have lost about one horse in 27 annually, by accident and sudden distempers to which they are liable. Since I began to use oxen in the draught, I cannot have had fewer than sixty trained for that purpose; and though I put them to every kind of drudgery, or where I think horses run any risk, such as breaking up rocky, mossy, and steep ground, I have never lost an ox, nor even had any of them so

much disabled as to prevent their feeding for the butcher.

10. *Expence of keeping three oxen.*

Eight months on straw at L.1. 10s. each	L.4	10	0
Three acres of turnips at L.6. 10s. per acre	19	10	0
Four acres and a half of good pasture at L.3.			
8s. per acre	-	-	14 3 6
One acre of cut grass or tares at L.6 per acre	6	0	0
Hay in the middle of the day in winter, 60			
stones at 1s. per stone	-	-	3 0 0
Shoeing	-	-	1 1 0
Interest of purchase money	-	-	2 5 0
	<hr/>		
	L.50	9	6

Expence of keeping two horses for the plough.

Two feeds of oats to each horse per			
day, or 30 bolls Linlithgow measure			
per annum at 17s. per boll	L.25	10	0
Two acres of clover and tares at			
L.6 per acre	-	-	12 0 0
Swedish turnips or potatoes, a			
quarter of an acre	-	-	1 10 0
Hay in the middle of the day in			
the spring months, 42 stone at			
1s. per stone	-	-	2 2 0
Straw	-	-	3 0 0
Shoeing	-	-	2 0 0
Interest of purchase money	4	5	0
	<hr/>		
	L.50	7	0
	50	7	0

In favour of two horses

L.0 2 6
N. B.

N. B.—My oxen draw with leathern collars and bridles, and consequently the expence in that respect is nearly the same as that of horses. It is not easy to say what may be the value of straw consumed either by horses or by oxen, so much depends upon situation, nature of the soil, &c. I have therefore calculated the expence of the straw both for horses and oxen at the same rate, a rate which tenants of breeding farms, who rear more cattle than they have winter food for, are accustomed to pay for cattle when three years old.

11. This depends so much on situation that it is impossible to say what might be the best proportion of horses and oxen on a farm where ten teams are necessary. In the part of the country where my farms lie, most of my grain must be carried from twenty to thirty miles, and lime and coals from eighteen to twenty-four. This lays me under the necessity of keeping a considerable proportion of horses for these purposes, for I do not think that oxen (though I have never tried them) would answer for long journies on our gritty roads. The formation of their feet and nature of their hoofs are not at all adapted to such journies. On my different farms I have twenty-two ploughs drawn by horses and eight by oxen. Were my farms situate in a part of the country where the carriage of lime and coals, and of grain to the market, is comparatively easy, I would employ a much greater proportion of oxen in the draught, for it is my opinion that they are fit for every operation of husbandry, long journies excepted.

I have now given you my opinion candidly and without reserve: and if the relative expences of the ox and horse teams are so near equal when the oats are

valued at 17s. per boll, I leave you to judge what the saving by the employment of oxen is when oats are near double that price.

17th July 1809.

After the preceding very satisfactory communication upon employing a proportion of oxen in agricultural labour has been given, perhaps it may be thought unnecessary to make any farther observations on the subject. The following remarks, however, may be made on some parts of the communication. In the answer to the 10th query, the price of oats is taken at 17s. per Linlithgow boll: For this part of the country it may safely be taken at 19s. 4d. The average of the fiars of this county from the year 1796 to 1807 both inclusive, is 19s. 4d. per Linlithgow boll of common oats; and the fiars of this county, as well as those of most others, are understood always to be considerably lower than the average prices for the whole year. The loss on account of the laying out of the purchase-money, is stated as merely the simple interest of the purchase money. Perhaps it would have been more accurate to have stated the loss conformably to the following principles:

From the answer to the third query it may be inferred, that horses continue fit for work during fifteen years nearly, or till they are eighteen or nineteen years old. The sum of L.60, which is the lowest price of two work horses, when first fit for the draught, that is stated in the answer to the 4th query, accumulates in fifteen years, when put out at compound interest, to L.124 or thereabouts. At the end of fifteen years, this

this last sum is wholly lost to the farmer, unless he sells his horses at that period, in which case the price of the horses must be deducted from the sum of L.124. Now L.5. 15s. lost year after year during fifteen years, is the same loss or nearly with that of L.124 at the end of fifteen years. The sum of L.5. 15s. then is the proper annual balance against two work horses on account of purchase money.

There can be no doubt that, if farmers sell off their horses before they become unfit for work, the balance against them on account of their purchase money may be diminished. By this plan there would be no loss at all in some cases, for a horse may frequently be sold at a higher price than that at which he was originally purchased. But it is very plain, that as an original plan, this is wholly impracticable. Were all farmers to sell off all their horses at the age when they are at their highest value, or even when they are at any age, who would be the purchasers? The loss by the decline in the value of horses, as well as by their death, must be borne by some; and it is obvious that the chief weight of it must ever lie on the farmer. In comparing the relative advantages of employing horses and oxen in agricultural labour, the question is "not what may occasionally happen, but what upon the whole or in general must happen." From the nature of the case, it is a circumstance at the long run inseparable from the employment of horses in agricultural labour, that their purchase money must be irrecoverable. It is peculiar to work oxen that their purchase money is recoverable with gain. From the answer to the fifth query it appears that three oxen improve in value to the extent

of L.18 during the three years in which they are employed in the draught. This, therefore, if not modified by other circumstances, would be a balance in favour of an ox team of about L.5. 15s. 9d. per annum; for L.5. 15s. 9d. accruing yearly as profit during three years, when put out at compound interest, are worth about L.18 at the end of three years.

When, however, oxen are sold off at four instead of seven years of age, there is a gain which arises from the interest of the purchase money. When four years old, oxen are stated to be worth from L.20 to L.25 each. But let L.25 be taken as the price. This for three oxen is equal to L.75. When kept for the draught, oxen are not sold till they are seven years old, or three years later than idle oxen. At the end of seven years, or during the three years from the end of the fourth to the end of the seventh, L.75 accumulate at compound interest, to about L.86. 16s. 5d. The difference, then, between L.75 and L.86 16s. 5d. which is L.11. 16s. 5d must be gained *cæteris paribus* by means of selling off three oxen, when four years old, instead of keeping them till they are seven years old. Now the sum of L.11. 16s. 5d. gained at the end of three years, is a gain equal in value or nearly to L.3. 15s. per annum during three years. The sum of L.3. 15s then is an annual balance in favour of selling off three oxen when four years old instead of keeping them till they are seven years old, and consequently it must be a balance to the same extent against keeping three oxen for the draught till they are seven years old; that is, it is an annual balance of L.3. 15s. against a team of three oxen.

In

In the answer to the 9th query it is stated that where twenty-seven horses are kept, one of them is annually lost by accident or sudden distemper. Supposing that the twenty seven horses on an average are worth L.30 each, there will be an annual balance of L.2. 8s. against a team of two horses, on account of accidents and violent distempers. It cannot be inferred from the answer, that out of sixty draught oxen there is any lost by accident or distemper; but it is reasonable to think that at the long run some proportion of loss must be sustained on this account. Let it therefore be supposed that, out of eighty work oxen, one may be annually lost by accident or sudden distemper. This proportion is rather more than three times lower than in the case of horses. If the sum of L.15 is taken as the average price of a draught ox, the annual balance against a team of three oxen, on account of accidents and distempers, will be 11s. 8d.

The above-mentioned circumstances being premised and kept in view, the account between the ox and horse teams may be stated thus:

Expence of keeping two horses for the plough as fed by the author of the preceding communication.

Two feeds to each horse per day, or 30 bolls

Linlith. meas. per ann. at 19s. 4d. per boll	L.29	0	0
Two acres of clover and tares at L.6 per acre	12	0	0
Swedish turnips or potatoes, $\frac{1}{2}$ of an acre	1	10	0
Hay in the middle of the day in the spring months, 42 stones at 1s. per stone	-	2	2.0

Carry over	-	L.44	12	0
------------	---	------	----	---

Brought over	-	L.44 12 0
Straw	- - - -	3 0 0
Shoeing	- - - -	2 0 0
Annual balance against two horses on account of purchase money	- - - -	5 15 0
Ditto ditto, accidents and sudden distempers		2 8 0

L.57. 15 0

*Expence of keeping three oxen as fed by the
author of the communication.*

Eight months on straw, at L.1. 10s.	
each	- - - L.4 10 0
Three acres of turnips at L.6. 10s.	
per acre	- - - 19 10 0

Four and a half ditto, good pasture grass at L.3. 3s. per acre	14 3 6
---	--------

One do. cut grass or tares at L.6.	6 0 0
------------------------------------	-------

Hay in the middle of the day in winter, 60 stone at 1s. per stone	3 0 0
--	-------

Shoeing	- - - 1 1 0
---------	-------------

Annual balance against three oxen on account of accidents and fatal distempers	- - - 0 11 3
--	--------------

Ditto ditto on account of being kept till seven years old instead of be- ing sold off when four years old	3 15 0
---	--------

L.52 10 9

Deduct annual amount of improve- ment in value	- - - 5 15 9
---	--------------

L.46 15 0 46 15 0

Annual balance in favour of a team of 3 oxen	L.11 0 0
--	----------

From

From the preceding statement it appears that about two acres and one-third more of land are required to produce food to three oxen than the quantity required to produce food to two horses, viz. two acres and three-fourths more of turnips, and four acres and a half more of pasture, about an acre less of clover, tares, and hay, and four acres less of oats or grain.* It would also appear that if oxen were fed with clover in the first year instead of pasture in the second or subsequent years, about two acres and one third of the clover would afford nearly as much food as four acres and a half of the pasture; for one acre of clover is set down as worth L.6, and four acres and a half of pasture are set down as worth L.14. 3s. 6d. It follows, therefore, that this mode of feeding with clover in the first year instead of pasture in the second and subsequent years, would require about equal quantities of land to feed three oxen and two horses. Still, however, about four acres more of turnips and grass would be required for an ox team than for an horse one, viz two acres and three-fourths more of turnips, and an acre and one-fourth more of grass and tares. From this it may be inferred, that on a ploughgate of land of which the labour is performed by oxen, when the quantity of grain produced is the same as when the labour is performed by horses, that is, when the same quantity of land is bearing grain in each case, the

* This is stated on the supposition that thirty Linlithgow bolls of oats on an average require four acres of good land to produce them, and that an acre of clover produces about 170 stones of hay on an average. The English acre is meant.

in farm labour, the land, especially if naturally good, will be the more fertile; and the same space of it will produce grain both more abundantly and of better quality. If, therefore, a smaller number of acres are sown with grain in the case of oxen than of horses, the ultimate produce will be proportionally less diminished. For the same reason, where oxen are employed in farm labour, the land, if a greater proportion is laid to grass, will produce it both more luxuriant and more nutritious. Besides, in the case of employing ox teams, if a greater quantity of land is laid to grass, there will be just so much the less in tillage, and consequently less labour will be required of the oxen than they are able to perform. The labour, therefore, which they can thus perform beyond that of their proper ploughgate, may be otherwise applied, and in this way will bring a profit corresponding to its value; or if the farm is of a considerable size, the number of draught oxen may be diminished in proportion to the less land in tillage and to the less labour required.

In a paper published in the *Farmer's Magazine*, No. 21. it is stated by Lord Somerville that in England oxen are frequently employed in journies on hard and stoney roads; but, in another passage of the same paper, his Lordship says, that they are subject to slight strains or lameness arising from travelling on such roads. This confirms the opinion stated in the communication, that oxen do not suit with long journies on gritty roads.

In some soils, perhaps, oxen, from the nature of their hoof, may not be so well adapted to draw in the plough as horses. Whether wet or clay soils are least deteriorated by the employment of horses or oxen in the plough

is a question comparatively of small importance. The feet both of horses and oxen are very detrimental to such soils if ploughed when too wet, and if ploughed when dry neither the feet of oxen nor those of horses will do any material harm. An ox team, however, is understood to be more suitable than a horse one to plough old pasture lands with a tenacious sward. Such lands are not easily broken up, and, in order to their being properly ploughed, require power steadily exerted in the draught. This is well known to be more the characteristic of an ox team than of a horse one.

There can be no doubt also that the employment of oxen may be more adviseable in some situations than in others. On land unsuitable to the cultivation of turnips, or rather where they cannot be raised, the expence of feeding work oxen must be much enhanced. On such land they must be fed with hay or with grain as a substitute for turnips; and this feeding is much more expensive than that with turnips, as well as less conducive to the health and improvement of the animals. In situations of this kind, indeed, the employment of oxen in the draught must be improper. In the neighbourhood of towns, where straw, turnips, grass, and all other kinds of green food are higher in price than that at a distance from them, the employment of oxen in the draught must be proportionally less profitable or advantageous.

It may seem strange if the employment of oxen in farm labour is so advantageous as is stated in the foregoing account, that the use of them should have been so generally laid aside within the last thirty years, when all other agricultural improvements have been so rapidly

ly and successfully carried on. This difficulty is easily removed. The change from the kind of ox teams formerly in use to teams of two horses, was a manifest and great improvement. At that time not fewer than two oxen and two horses were yoked in one team, and two oxen besides were kept to relieve alternately the two in the draught. It was easy to see if two horses performed as much work as four oxen and two horses, that the use of the latter team should be given up, and that of the former introduced; and when a practice is established, it is not in general hastily abandoned, unless the disadvantage of it is very apparent. When the change from the team of two or rather four oxen and two horses took place, it was not known that three oxen were equal to perform as much work as two horses, and even now this seems to be but very partially known. Sometimes four, but generally six oxen are stated to be necessary for this purpose.

On the supposition that the employment either of oxen or of horses in the draught is most profitable to the farmer, it seems to be unnecessary to enquire whether it will also be most profitable or advantageous to the community. It is very plain that the profits of the farmer cannot accrue from any other source than his marketable produce, and therefore if most marketable produce is obtained by the employment of oxen in the draught, the employment of them must be most profitable both to the farmer and to the community, and *vice versa*.

Upon the whole, it may be concluded that in certain situations, a considerable profit may be gained by employing a proportion of oxen instead of horses in agricultural

cultural labour, and that this profit arises chiefly from a saving of grain, though partly from the circumstance of the oxen redeeming their purchase money, and even improving in value from the time when they begin to work to the time of their being sold, and partly also from their being less subject than horses to sudden death, accidental hurts, and occasional distempers.

U*Plan*

100

THE HISTORY OF THE
CITY OF BOSTON
FROM 1630 TO 1800
BY
JOHN H. COLEMAN
BOSTON
PUBLISHED BY
J. B. LEECH, 1850

100

P L A N
OF THE
RE-PRINTED REPORTS.

*Preliminary Observations by the President of the Board
of Agriculture.*

THE nature and object of the County Reports are now much better understood than was originally the case; and when their merits are duly appreciated, the plan must meet with the approbation of every reflecting mind. It must be of great service to any district, to have its agricultural system and practices thoroughly examined and discussed. It must be of still greater consequence to any individual, in such a district, to be enabled to compare the system adopted there, with that of every other district in the kingdom; but it must be still more useful, when a digest is made of the whole, under the sanction of such an institution as the Board of Agriculture.

In order to assist those who undertake drawing up those Reports, it is thought expedient to lay before them the following Outline, or Table, prepared by Mr Young, the Secretary, on a larger scale than the one formerly printed. It is not expected that every surveyor should procure information regarding all the particulars contained in the subjoined Table; at the same time, as the material facts and observations contained in these Reports, will afterwards be formed into a

Code, or Digest of the National Husbandry, it is extremely desirable, that the information should be minute, in order that the omissions may be of as little consequence as possible, when the result of the whole inquiry is laid before the public.

One point is of peculiar importance, that the surveyors should inquire into new or peculiar practices, and should ascertain, as minutely as possible, the nature and effects thereof; for a single practice discovered, by means of these surveys, in a narrow district, or even on a single farm, if spread through the medium of the Board of Agriculture, over the whole kingdom, may add more to the national wealth than the possession of the Indies.

JOHN SINCLAIR.

BOARD OF AGRICULTURE,
32, Sackville Street, London,
April 25, 1806.

CHAP. I. *Geographical State and Circumstances.*

	Page.
SECT. I. Situation and extent	1
Acres in the county.	
II. Divisions	2
1. Political,	
2. Ecclesiastical.	
III. Climate	ib.
1. Prevalent winds,	
2. Quantity of rain that falls,	
3. Other meteorological tables	4
IV. Soil	6
1. Clay,	
2. Loam,	
3. Sand,	

4. Chalk,	
5. Peat,	
6. Acres of each.	
7. Acres of waste,	
SECT. V. Minerals	8
1. Coal,	ib.
2. Copper,	
3. Lead,	
4. Tin,	
5. Iron,	
6. Various	11
VI. Water	13
1. Streams and Rivers,	
2. Lakes,	
3. Ponds,	
4. Springs	14
CHAP. II. State of Property.	
SECT. I. Estates and their management	5
II. Tenures	16
1. Freehold,	
2. Copyhold,	
3. Church leases.	
CHAP. III. Buildings.	
SECT. I. Houses of proprietors	17
1. Advantageously situated,	
2. Well planned for country gentlemen of moderate fortunes,	
3. Elegantly constructed.	
II. Farm-houses and offices	18
III. Repairs	20
IV. Prices of building, materials, and artisans' labour	ib.
V. Cottages	ib.
1. Plans,	
2. Expence,	
VI. Bridges	21

	Page.
CHAP. IV. Occupation.	
SECT. I. Size of farms	23
<i>ii. Farmers</i>	25
<i>iii. Rent</i>	26
<i>iv. Tithe</i>	27
<i>v. Poor-rates ; other parochial taxes</i>	ib.
<i>vi. Leases</i>	28
<i>vii. Expenses and profit</i>	35
CHAP. V. Implements.	
SECT. I. Ploughs	36
1. Rules of construction,	
2. Breast, or mould board,	
3. Throat,	
4. Heel,	
4. Copse,	
6. Wheels, foot, or swing,	
7. Other particulars,	
8. Iron,	
9. Price,	
10. Draught,	
11. Trenching ploughs,	
12. Draining ploughs,	
13. Road ploughs,	
<i>ii. Harrows</i>	38
<i>iii. Rollers</i>	39
1. Wood,	
2. Stone,	
3. Fluted,	
4. Convex,	
5. Concave,	
6. Divided,	
7. Iron.	
<i>iv. Drills</i>	40
SECT.	

	Pages.
SECT. V. Horse hoes - - -	40
VI. Scarifiers—scufflers—shims—broad shares	41
VII. Thrashing-mills - - -	ib.
VIII. Chaff-cutters,	
IX. Bruisers,	
X. Waggon,	
XI. Fumbrils,	
XII. One-horse carts - - -	46
XIII. Draining-mills,	
XIV. Sluices,	
XV. Rakes, hoes, spades, paring-shovels -	49
XVI. Winnowing machines - - -	ib.
XVII. Borers - - -	50
XVIII. Draining tools - - -	ib.
XIX. Sowing-troughs,	
XX. Weighing engines - - -	51
XXI. Miscellaneous articles - - -	ib.

CHAP. VI. *Enclosing,* - **53**

SECT. I. Cases by Act of Parliament,

1. Acres,
2. Conversion,
3. Effect on Produce, population, and the poor,
4. Expences,
5. Rise of rent,
- II. Fences.
 1. Sort,
 2. Expence,
 3. Duration,
 4. Gates,
- III. New farms.

CHAP. VII. *Arable Land.*

Sect. I. Tillage	58
1. Ploughing,	
2. Harrowing,	
3. Rolling,	61
4. Scarifying,	
5. Ridges,	
6. Putting in crops without ploughing,	
7. Drilling,	ib.
8. Horse-hoeing,	62
9. Hand-hoeing,	
10. Weeding,	
11. Striking furrows,	
II. Fallowing,	ib.
III. Course of Crops	65
IV. Wheat,	88
1. Preparation,	
2. Manuring,	
3. Season,	
4. Putting in,	
5. Sowing,	89
6. Steeping,	
7. Sort,	
8. Depth,	
9. Drilling,	
10. Dibbling,	
11. Water-furrowing,	
12. Hoeing,	
13. Feeding,	
14. Reaping and harvesting,	92
15. Distempers,	
1. Mildew,	
2. Smut,	
3. Burnt,	

4. Red gum,	Page.
5. Cockle-eared,	
6. Root-fallen,	
16. Stacking,	
17. Thrashing,	94
18. Price	ib.
19. Grinding,	
20. Bread	
21. Stubbles.	

SECT. v. Rye - - - - - ib.
 The same as Wheat, except water-furrowing
 and distempers.

vi. Barley,	ib.
1. Tillage.	
1. Ploughing,	
2. Harrowing,	
3. Rolling,	
4. Put in without ploughing,	
5. Scarifying,	
2. Manuring,	
3. Drilling,	
4. Time,	
5. Sort,	
6. Seed,	96
7. Depth,	
8. Rolling,	
9. Harvesting,	ib.
10. Produce,	
11. Straw,	
12. Awns,	
13. Malt,	
14. Price,	
15. Bread, and mode of making it.	

PLAN, &c.

SECT. VII. Oats,

1. Tillage,

1. Ploughing,

2. Harrowing,

3. Rolling,

4. Without ploughing,

5. Scarifying,

2. Manuring,

3. Drilling,

4. Dibbling,

5. Time,

6. Sort,

7. Seed,

8. Depth,

9. Rolling,

10. Weeding,

11. Harvesting,

12. Produce,

13. Straw,

14. Application,

1. Horses,

2. Oatmeal,

3. Bread, and mode of making,

15. Price,

VIII. Pease

1. Tillage,

1. Ploughing,

2. Harrowing,

3. Rolling,

4. Without ploughing,

5. Scarifying,

2. Manuring,

3. Drilling,

8, &c.

317

Page.

what stock,

—value,

often fed,

le,

108

ib.

ib.

ib.

109

7. Seed,

	14. Weeding,	
	15. Distempers,	
207	16. Cutting very green,	
26	17. Harvesting,	
227	18. Produce,	
	19. Straw,	
	20. Application,	
	21. Stubbles,	
	22. Price,	
231	23. How used as food.	

SECT. X. Tares,

107

1. With what view sown,
1. For seed,
2. For hay,
3. For soiling,
4. For feeding,
2. For seed,
- The objects of inquiry the same as in the case of pease.

3. For hay,

1. Time of Mowing,
2. Making,
3. Stacking,
4. Salting, if season bad,
5. Application—value,
6. Stubble,

4. For soiling,

1. Time of mowing,
2. Stock to which given,
3. Advantages,
4. Value per acre,
5. Quantity of dung raised,
6. Stubble,

5. For

5. For feeding,	Page.
1. With what stock,	
2. Effect—value,	
3. How often fed,	
4. Stubble,	
SECT. XI. Lentils,	108
1. Soil,	
2. Tillage,	
3. Time,	
4. Seed,	
5. Application,	
XII. Buckwheat	ib.
1. Soil,	
2. Tillage,	
3. Time,	
4. Seed,	
5. Blast,	
6. Harvest,	
7. Ploughing in,	
1. Time,	
2. Manner,	
3. Skim-coulter,	
4. Effect,	
8. Produce,	
9. Application,	
10. Price,	
11. Stubbles,	
XIII. Turnips,	ib.
1. Soil,	
2. Tillage,	ib.
3. Manuring,	
4. Time,	
5. Drilling,	109
6. Sort,	
7. Seed,	

7. Seed,	109
8. Rolling,	
9. Harrowing,	
10. Fly—Preventatives,	ib.
11. Hoeing,	110
12. Consumption,	ib.
1. Drawn,	
2. Fed on the land,	
3. Hurdling,	
4. Expence,	
5. Effect,	
13. Value—price,	111
14. Modes of preservation,	ib.
SECT. XIV. Cole-seed, or rape,	ib.
1. Soil,	
2. Tillage,	
3. Manuring,	
4. Time,	
1. For seed,	
2. For Feeding,	
5. Seed,	
6. Hoeing,	
7. Transplanting,	
8. Fly,	
9. Reaping,	
10. Thrashing,	
11. Produce,	
1. Seed,	
2. Value food,	
12. Price,	
1. Seed,	
2. Per acre fed,	
XV. Cabbages,	112
1. Soil,	

2. Nursery,

Page,

2. Nursery,
 1. Soil,
 2. Manuring,
 3. Seed,
 4. Sort,
 5. Time,
 6. Transplanting,
 7. Watering,
 8. Grub.
3. Tillage,
4. Manuring,
5. Planting,
6. Drilling where to remain
7. Horse-hoeing,
8. Hand-hoeing,
9. Weeding,
10. Consumption,
 1. By what stock,
 2. Carted off,
 3. Fed on the land,
 4. Any mode of preserving,
11. Value—price,
12. Exhaust or improve,
 1. When used,
 2. How,
 3. Comparison with turnips,

SECT. XVI. Ruta Baga, or Swedes,		-	-	113
1. Soil,	-	-	-	ib.
2. Tillage,	-	-	-	ib.
3. Manuring,				
4. Seed,	-	-	-	ib.
5. Sort—white or yellow,				
6. Time of sowing,				
7. Transplanting,	-	-	-	ib.
8. Horse-hoeing,				

9. Hand-

	Page.
9. Hand-hoeing,	
10. Fly,	
11. Application,	113
12. Value,	
13. Comparison with turnips,	ib
SECT. XVII. Turnip-cabbage,	114
1. Above-ground,	
2. Under-ground,	
3. Report any experiments that have been made on these plants.	
XVIII. Khol Rabie,	ib.
Report experiments,	
XIX. Boorcole Kale, Thousand Leaved, Anjou, Jerusalem, Brussels, &c.	ib.
Report experiments,	
XX. Carrots,	115
1. Soil,	
2. Preparation,	
3. Tillage,	
4. Seed,	
5. Steeping,	
6. Time,	
7. Hoeing,	
8. Weeding,	
9. Mowing the tops,	
1. Hay,	
2. Soiling,	
10. Taking up,	
11. Produce per acre,	
12. Storing,	
13. Consumption,	
1. Horses,	
2. Cows,	

3. Fat beasts,			
4. Hogs,			
5. Sheep,			
6. Boiling,			
7. Steaming,			
14. For Seed,			
SECT. XXI. Parsnips,	-	-	115
The same inquiries as for carrots, except mowing,			
XXII. Beets,	-	-	116
The same as for parsnips,			
XXIII. Potatoes,	-	-	ib.
1. Soil,	-	-	ib.
2. Manuring,			
3. Mode,	-	-	117
1. Lazy beds,			
2. Drills,			
3. Dibbled,			
4. Preparation,			
5. Tillage,	-	-	ib.
6. Setts,	-	-	118
7. Sort,	-	-	ib.
8. Planting,	-	-	ib.
9. Horse and hand hoeing,			
10. Weeding,			
11. Tops,	-	-	121
12. Taking up,	-	-	ib.
1. Digging,			
2. Ploughing,			
13. Storing,	-	-	ib.
1. Pies, or heaps,			
2. Pits,			
3. Buildings,			
14. Produce,	-	-	ib.
X			
			15. Price,

				Page.
15. Price,	-	-		121
16. Application,	-	-		122
1 Hogs,				
2. Horses,				
3. Cows,				
4. Fat beasts,				
5. Sheep,				
6. Boiling,				
7. Steaming,	-	-	-	ib.
8. Drying to keep,				
9. Starch,	-	-	-	ib.
10. Bread,				
17. Exhaust or improve,				
18. What succeeds,	-	-		126
SECT. XXIV. Clover,	-	-	-	ib.
1. With what crops sown,				
2. Manuring,				
3. Seed,				
4. Time,				
5. Use,	-	-	-	127
1. Mown,				
2. Fed,				
3. Soiled,				
4. Seeded,				
6. Which the best preparation for wheat,				ib.
7. White,				
1. Culture,				
2. Produce,				
8. Is the land tired of clover?	-	-		ib.
9. In that case, what variation of course?				
xxv. Trefoil,	-	-	-	128
1. Soil,				
2. Manure,				
3. Seed,				
4. Time,				

5. Applica-

Page.

5. Application,	
1. Mown,	
2. Fed,	
3. Seeded,	
6. Duration,	
SECT. XXVI. Ray-grass,	128
1. Soil,	
2. Manure,	
3. Seed,	
4. Time,	
5. Application,	129
1. Fed,	
2. Hay,	130
3. Seeded,	
6. Duration,	
7. Prepares for what crop,	
xxvii. Sainfoin,	
1. Soil,	
2. Manure,	
3. Tillage,	
4. Seed,	
5. Time,	
6. Drilling,	
7. Application,	
1. Hay,	
2. Seed,	
3. Aftergrass,	
8. Duration,	
9. Harrowing,	
10. How broken up?	
11. How soon renewed?	
xxviii. Lucerne,	
1. Soil,	
2. Preparation,	

- 3, Manure,
- 4, Seed,
- 5, Drilling,
- 6, Time,
- 7, Horse-hoeing,
- 8, Hand-hoeing
- 9, Weeding,
- 10, Harrowing,
- 11, Cutting,
- 12, Soiling-hay,
- 13, Produce—value,
- 14, Application,
- 15, Duration,
- 16, How broken up?

SECT. XXIX. Chicory,

- 1, Soil,
- 2, preparation,
- 3, Manure,
- 4, Seed,
- 4, Drilling,

- 6, Time,
- 7, Application,

- 1, Horses,
- 2, Cattle,
- 3, Sheep,
- 4, Hogs,

- 8, Duration,

- 9, How broken up,

xxx. Burnet,

- 1, Soil,
- 2, Preparation,
- 3, Seed,
- 4, Time,
- 5, Application,
- 6, Duration,

SECT.

SECT. xxxi. Hops,

- 1, Soil,
- 2, Rent,
- 3, Exposition,
4. Preparation,
- 5, Shelter,
- 6, Manuring,
- 7, Planting,
- 8, Sort,
- 9, Management first year,
- 10, Ordinary cultivation,
- 11, Digging,
- 12, Poles,
- 13, Poling,
- 14, Tying,
- 15, Culture,
- 16, Distempers,
- 17, Picking,
- 18, Drying,
- 19, Bagging,
- 20, Expences,
- 21, Produce,
- 22, Profit and loss account,
- 23, Effect on a farm,

xxxii. Hemp,

- 1, Soil,
- 2, Tillage,
- 3, Manure,
- 4, Seed,
- 5, Sowing,
- 6, Time,
- 7, Pulling and tying,
8. Watering,
- 1, Pits,
- 2, River,

3, Pond,	
4, Time,	
9, Grassing,	
10, Binding,	
11, Breaking,	
12, Price broken,	
13, Bunching and heckling,	
14, Price heckled,	
15, Spinning—earnings,	
16, Repetition on the same spot,	
SECT. XXXIII. Flax, — — — —	131
The same as hemp with the addition of	
weeding,	
XXXIV. Liquorice,	
XXXV. Chamomile,	
XXXVI. Teasils,	
XXXVII. Carraway and Coriander,	
XXXVIII. Sundries,	

CHAP. VIII. Grass Land.

SECT. I. Meadows, — — — —	133
1, Low on rivers,	
2, Floods,	
3, Upland,	
4, Produce—hay,	ib.
5, Rent,	
6, Half year ones,	
7, Expence mowing, making, and stacking,	134
8, Manuring,	ib.
II. Pastures, — — — —	ib.
1, Rich feeding land,	
1, Stock,	ib.
2, Rent,	135
3, Produce in meat per acre,	ib.
2, Dairy	

	Page.
2, Dairy grounds, - - - -	135
1, Stock,	
2, Produce per acre, - - -	ib.
3, Rent, - - - -	136
3, Sheep pasture, - - - -	ib.
1, Stock,	
2, Produce, - - - -	ib,
3, Rent, - - - -	ib,
4, Laying land to grass, - - -	137
1, Preparation,	
2, Time of sowing, - - -	138
3, Seeds,	
4, Management first year,	
5, Manuring,	
5, Breaking up grass land, - - -	139
1, Paring and burning,	
2, Ploughing,	
3, Cropping,	
4, Rent for permission,	

CHAP. IX. *Gardens and Orchards,*

140

SECT. I. *Gardens,*

- 1, Rent,
- 2, Annual produce,
- 3, Cottagers,
- 4, Destruction of insects, grubs, and other vermin,

II. *Orchards,*

- 1, Sort,
- 2, Rent,
- 3, Produce,
- 4, Blights, and other distempers,

CHAP. X. *Woods and Plantations.*

141

SECT. I. Copse woods,

- 1, Age of cutting,
- 2, Rent,
- 3, Produce—value,
- 4, Sort,

- 1, Hoops,
- 2, Poles,
- 3, Hurdles,
- 4, Faggots,
- 5, Charcoal,

4, Grubbed up,

- 1, Expence,
- 2, Crops,
- 3, Improvement,
- 4, Rent,

II. Beech, and other woods,

- 1, Age of cutting,
- 2, Application,
- 3, Rent,
- 4, Value standing per acre,

III. Plantations,

- 1, Sort of Trees,
- 2, Expense,
- 3, Management,
- 4, Profit,

144

IV. Timber,

- 1, Scarcity,
- 2, Growth and value,
- 3, Felling,
- 4, Price,
- 5, Bark,
- 6, Any extraordinary trees,

CHAP.

CHAP. XI. *Wastes.*

	Page
SECT. I. Moors—extent, - - -	145
II. Mountains—extent, - - -	ib.
1, Present value,	
2, Application,	
3, Improvements,	
1, Enclosing,	
2, Paring and burning,	
3, Lime,	
4, Culture,	
5, Application,	
6, Profit,	
III. Bogs—extent - - - -	146
1, Improvement,	
1, Draining,	
2, Burning,	
3, Manuring,	
4, Culture,	
5, Application,	
6, Rent,	
7, Profit,	
IV. Fens and marshes—extent	
1, Sort,	
2, Present use,	
3, Improvement,	
1, Draining,	
2, Mills,	
3, Application,	
4, Rent,	
5, Profit,	
V. Forests—extent,	
1, Present state,	
2, How improveable,	

SECT.

SECT. VI. Heaths and downs—extent

- 1, Present state and value,
- 2, Improvements,
- 3, Increase of sheep,

CHAP. XII. Improvements.**SECT. I. Draining**

148

- 1, Elkington's described, ib.
- 2, Open cuts,
- 3, Hollow drains,
 - 1, Depth,
 - 2, Filled, how?
 - 3, Expence, 151
 - 4, Effect, ib.
 - 5, Ploughed,
 - 4, General benefit,

II. Paring and burning

152

- 1, Soil,
- 2, Turf, at what age?
- 3, Depth,
- 4, Burning,
- 5, Spreading,
- 6, Season,
- 7, Crop and course,
- 8, Expence,
- 9, Profit,

III. Manuring.

153

- 1, Marl, ib.
- 2, Chalk,
- 3, Lime, ib.
- 4, Limestone broken,

5, Limestone

	Page.
5, Limestone gravel,	
6, Clay, - - - - -	155
7, Gypsum,	
8, Shells, - - - - -	156
9, Sea-ouze - - - - -	ib.
10, Sea-weed, - - - - -	ib.
11, Pond and river weeds, - - - - -	ib.
12, Burnt earth, - - - - -	ib.
13, Refuse fish, - - - - -	157
14, Ashes, - - - - -	ib.
15, Soot, - - - - -	ib.
16, Malt dust,	
17, Salt, - - - - -	ib.
18, Hair, hoofs, bones, feathers, - - - - -	158
19, Floughing in green crops, - - - - -	159
20, Town dung, - - - - -	ib.
21, Yard dung, - - - - -	ib.
1, Long and fresh,	
2, Rotten,	
3. Comparison,	
22, Rape-dust,	
23, Oil compost,	
24, Whale blubber,	
25, Sugar baker's refuse,	
26, Woollen rags, - - - - -	160
27, Composts and various manures,	
SECT. IV. Irrigation, - - - - -	ib.
1, Soil,	
2, Water,	
1, Quality,	
2, How often used,	
3, Reservoirs,	
4, Rendered turbid,	

- 3, Plan of meadow,
- 4, Ridge work,
- 5, Catchwater,
- 6, Application,
 - 1, Spring food for sheep,
 - 2, Hay,
 - 3, After grass,
 - 4, Rent,
 - 5, Produce,
- 7, Expense of forming
- 8, For Winter watering only,
- 9, Means of extending,
 - 1, Clauses in acts of enclosure,
 - 2, Water-mills a dreadful nuisance,
 - 3, By navigable canals,
 - 4, By machinery,
 - 1, Mills.
 - 2, Steam engine.

CHAP. XIII. *Embankments.*

- SECT. I, Against the sea, — 162
- II. Rivers,
- III. In fens,
- IV. Form—sections,
- V. Materials,
- VI. Puddling,
- VII. Fascines,
- VIII. Expenses,
- IX. Reparations,
- X. Cases described, with plans,

CHAP.

CHAP. XIV. *Live Stock.*

	Page.
SECT. I. Cattle, - - - -	163
1, Breed,	
1, For beef,	
2, For milk,	
3, For work,	
4, Rules pursued in breeding,	
5, Size,	
6, Form,	
7, Constitution,	
8, Colour,	
9, Crosses,	
2, Food, - - - -	165
1. Winter,	
1, Hay,	
2, Roots,	
3, Grass kept,	
4, Oil-cake and corn,	
5, Green crops,	
6, Chaff,	
7, Cooking--boiling, &c.	
2, Summer,	
1, Grass,	
2, Artificial ditto,	
3, Soiling,	
4, Water,	
3. Salt,	
3. Management,	
1, Fattening,	
2, Dairying, - - - -	166
3, Working,	
4, Stalls,	

	Page.
4, Stalls, yards, sheds,	
5, Ascertaining, by weighing alive, the meat gained by food given—live and dead weight; &c.	
6, Distempers, - - -	168
7, Worked oxen,	
1, Number kept,	
2, Work done—age,	
3, Compared with horses,	
4, Food,	
5, Shoeing,	
SECT. II. Sheep, - - -	169
1, Breed,	
1, System,	
2, Crosses,	
3, Wool, - - -	172
4, Carcase,	
5, Fold,	
2, Food, - - -	ib.
1, Winter,	
1, Hay,	
2, Roots,	
3, Green crops,	
4, Grass kept,	
5, Chaff,	
6, Corn and cake,	
2, Spring,	
1, Watered meads,	
2, Kept grass,	
3, Burnet,	
4, Rye,	
5, Ray-grass,	

Page.

- 6, New lays,
- 7, Vetches,
- 3, Summer,
 - 1, Grass,
 - 2, Artificial ditto
 - 3, Sheep walks
- 4, Salt,
- 3, Folding,
 - 1, Value,
 - 2, Quantity of land manured by a given number,
 - 3, Effect on the flock,
 - 4, On the number kept,
 - 5, Experiments to prove the loss or benefit,
 - 6, Cotting,
 - 7, Sheep-yards,
- 4, Management,
 - 1, Breeding flock,
 - 2, Fattening,
 - 3, Folding,
- 5, Live and dead weight, and meat gained by food,
- 6, Wool,
 - 1, Weight,
 - 2, Quality,
 - 3, Price,
 - 4, Dependence on breed, food, and management,
- 7, Distempers, 173
- 8, Numbers kept on different spaces of land,

SECT.

	Page.
III. Horses,	174
1, Breed and breeding,	
2, Number kept to space of land,	
3, Work performed,	175
4, Food—Price,	177
5, Expence,	ib.
1, Food,	
2, Shoeing,	
3, Decline in value,	176
4, Harness,	
6, Distempers,	
IV. Asses * work performed, compared with price, food, and longevity,	
V. Mules, advantages and disadvantages,	
VI. Hogs,	178
1, Breed and breeding,	179
2, System,	
3, Food,	
1, Clover,	
2, Lucerne,	
3, Chicory,	
4, Grass,	
5, Corn,	
6, Roots,	
7, Green crops,	
8, Boiling,	
9, Steaming,	
10, Warm food,	
4, Sties,	
5, Distempers,	ib.

* Vide the opinions of Bakewell, Worthington, Carter, &c. in preference of this team.

	Page.
SECT. VII. Rabbits,	180
1, Breed,	
1, Common,	
2, Silver-hair,	
2, Food,	
1, Warrens,	
1, Return,	
2, Rent,	
3, Produce,	
2, Hay,	
3, Bark,	
3, Management,	
4, Sale and produce—skins and carcas	
5, Distempers,	
6, In hutches and orchards,	
7, Return by dung,	
VIII. Poultry,	ib.
1, Turkies,	
2, Geese,	
3, Fowls,	
4, Ducks,	
IX. Pigeons,	181
1, Advantages and disadvantages,	
2, Houses,	
1, Mud,	
2, Brick,	
3, Timber, &c.	
4, Expence,	
3. Profit,	
X. Bees,	ib.

CHAP. XV. Rural Economy. **Page.**

SECT. 1. Labour.		
1. Servants,		
2. Labourers.		
1. Price, Winter,		
2. — Summer,		
3. — Harvest,		
4. Year's Earnings,		
5. Rise of Labour in given periods		
6. Hours of Work,		184
7. Piece-Work,		ib.
3. Cottages attached to Farms,		185
4. Expense proportioned to Space of Land.		
11. Price of Provisions,		186
III. Fuel,		187
IV. Circumstances of management of Fuel meriting Not		

CHAP. XVI. Political Economy: Circumstances dependent on Legislative Authority.

SECT. 1. Roads,		188
1. Turnpikes,		
2. Materials,		
3. Expense,		
4. Farm ways,		
5. Concave,		
6. Convex,		
7. Application of Water.		
II. Iron Rail-ways.		
III. Canals,		
IV. Fairs,		189
SECT.		

SECT. V. Markets.	
vi, Weights and Measures,	190
1, Land,	
2, Corn,	
3, Liquids,	
4, Wood,	
5, Wool,	
vii, Price of Products compared with Expenses,	
viii, Manufactures,	199
1, Species,	
2, Earnings,	
3, Rise of Rent,	
4, Poor-rates, increase by,	
ix, Commerce,	201
Effects on Agriculture,	
x, The Poor,	204
1, Their state,	
2, Annual Receipt and Expenditure,	
3, Sums raised by Rates,	
4, Workhouses,	
1, Management,	
2, Expence per head,	
5, Houses of Industry.	
1, Management,	
2, Expence per head,	
6, Box Clubs—advantages & disadvantages,	
xi, Population,	214
1, Tables of births, burials and marriages,	216
2, Has it depended solely on Food, or on the permission and facility of raising Cottages?	
3, Is	

- 3, Is the district over or under peopled?
and at what price of Wheat? 218
- 4, Healthiness of the District, 218
- 5, Food, and Mode of Living, ib.

CHAP. XVII. Obstacles to Improvement.

SECT. I. Relative to Capital, 221

- III. — to Expenses, 221
- IV, — to want of power to Enclose, 221
- V, — to Tithes, 221
- VI, — to Poor-rates, 221
- VII, — to want of disseminated knowledge 222
- 1, Agricultural Libraries, 222
- 2, Cheap Publications, 222
- VIII, Enemies, 222
- 1, Red or Waie Worm, 222
- 2, Slugs, 222
- 3, Rats and Mice, 222
- 4, Sparrows, 222
- 5, Other Vermin, 222
- 6, Means of preventing, 222

CHAP. XVIII. Miscellaneous Articles.

SECT. I. Agricultural Societies, 230

- 1, Those established,
- 2, Where wanting,
- II, Provincial Terms—Glossary.

Conclusion.

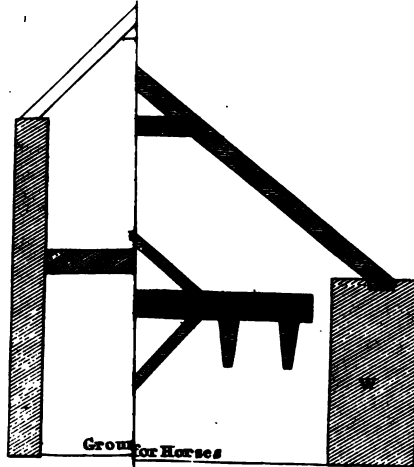
Means of Improvement, and the Measures calculated for that purpose.

Appendix. 241

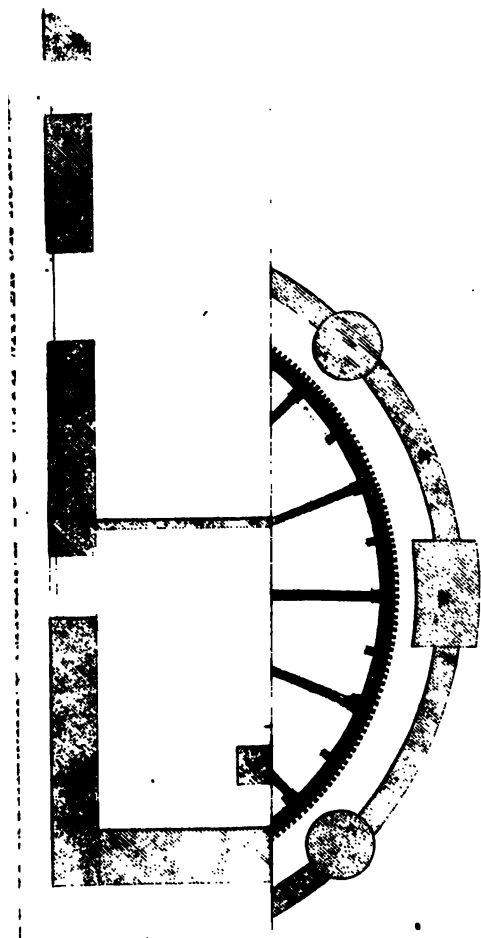
Tables, or Papers worthy of Preservation.

Alex. Smellie, Printer.

EL HORSES.



100



Scale one Fourth of an Inch to the Foot

- | | | |
|--------------------------------|---|----------------------------|
| A Large Wheel 36 Feet Diameter | I Fanners | S A Pit Wheel |
| B A Pinion 32 Teeth | J Wheel for Bales | T Upright Shaft |
| C A Crown Wheel | K Pinion for D' | U Threshing Barn |
| D Drum Pinion | L A Shave for driving Bales into V Straw Barn | |
| E Drum Shaft | M A Belt for D' N A Shave for D' | W Pillars for Horse Course |
| F Drum 8 feet long | O Two Wheels for driving Rollers | X Wall Plates for the Roof |
| G Bales | P Three more Wheels for Rollers | Y of Horse Course |
| H Second Bales | Q A Pinion for D' | XX Roof of Horses Course |
| | R A water Wheel 15 feet Diameter | |

2000

2001

2002

2003

2004

2005

2006

2007

2008

2009

2010

2011

2012

2013

2014

2015

2016

2017

2018

2019

2020

2021

2022

2023

2024

2025

2026

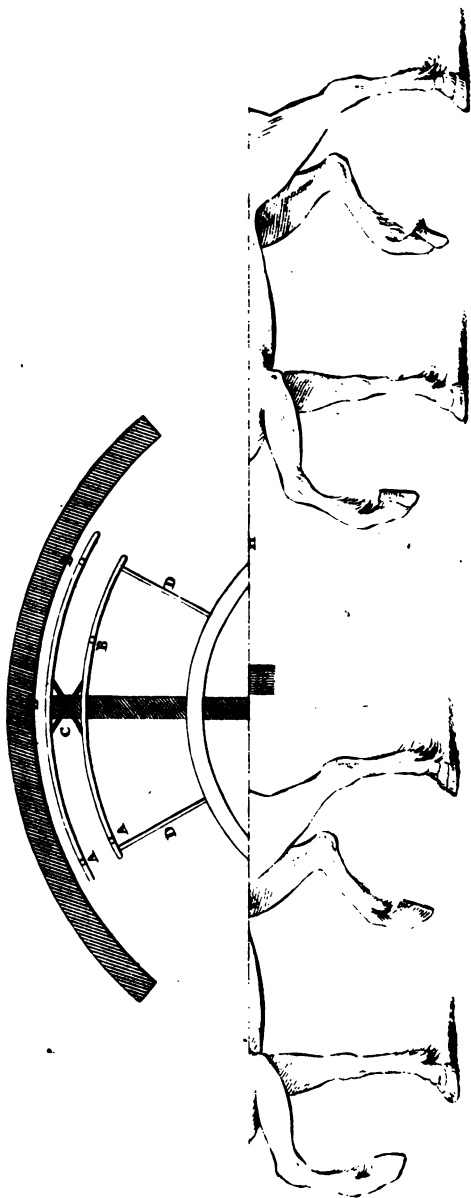
2027

2028

2029

VIEW OF THE MILL SHADE FROM ABOVE .

Fig. 1.

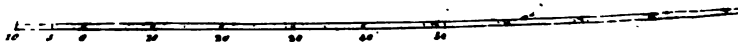
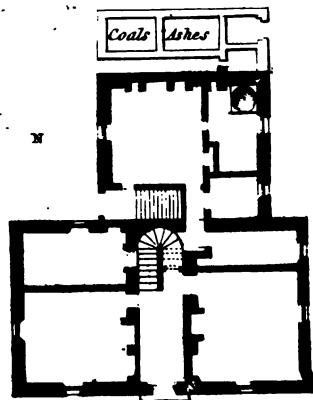
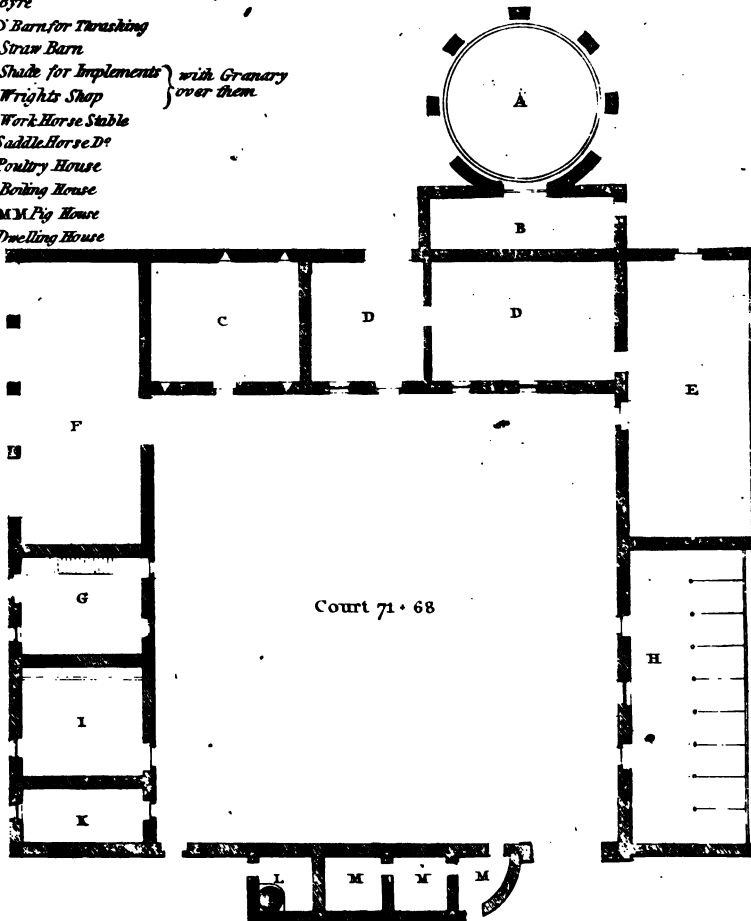


A Pulley on a large scale .

1

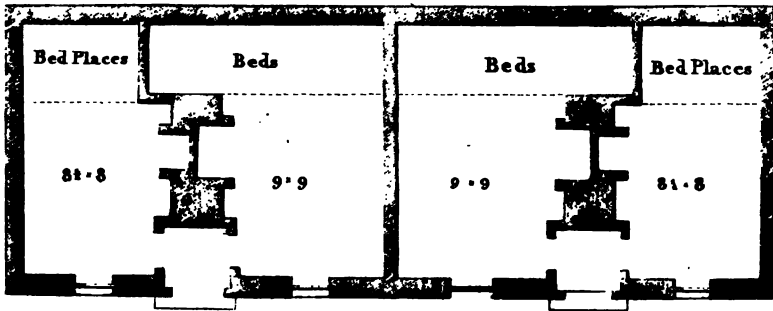
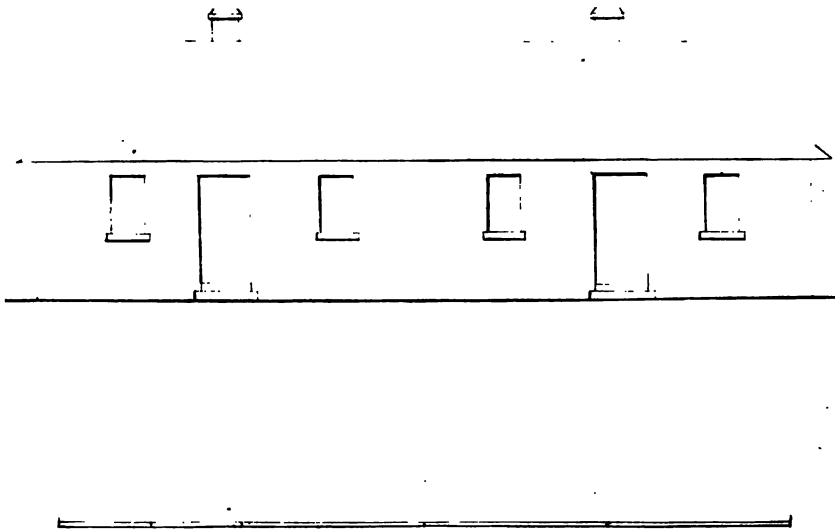
■

- A Horse wheel of Threshing Mill
 B Water wheel of D.
 C Byre
 DD Barn for Threshing
 E Straw Barn
 F Shade for Implements } with Granary
 G Wrights Shop } over them
 H Work Horse Stable
 I Saddle Horse D.
 K Poultry House
 L Boiling House
 MMM Pig House
 N Dwelling House



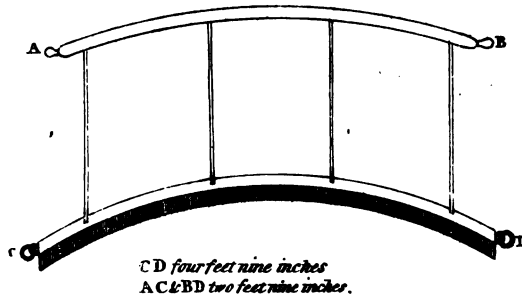


PLAN OF TWO FARM COTTAGES.

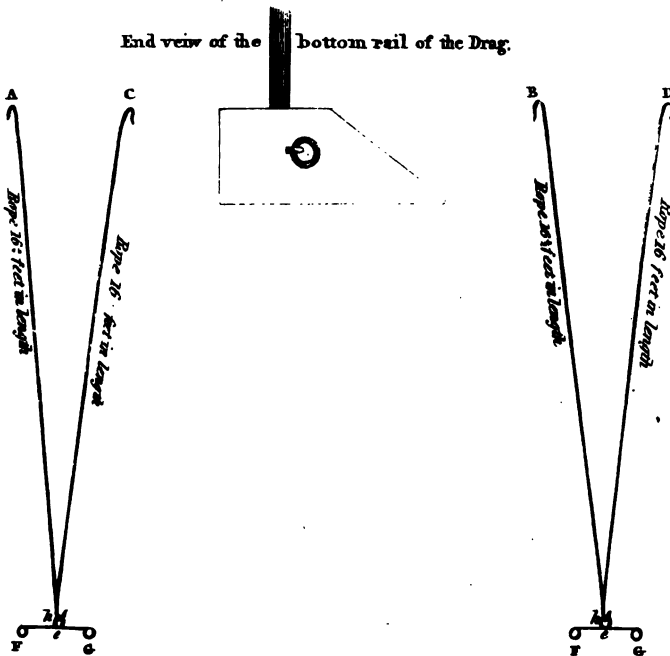


A Cottage built according to this Plan may be executed for about £ 30. & if more than one are built in the same Row, the expense is considerably diminished. Cottages of this kind being raised above the surface of the surrounding ground: divided into separate apartments would be much more conducive than those in general use both to the health & comfort & also to the decent manners of the Cottagers.

Sketch of a Hay Drag.



End view of the bottom rail of the Drag.



ACBD Hooks corresponding to the eyes of the Dragger marked
with the same letters
F & G single trees with eyes for the hooks of the ropes & traces
h h hooks of the ropes.

2

1

10

